

Coso Monitoring Program
October 1998 Through September 1999

by
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Public Works Department

FEBRUARY 2000

NAVAL AIR WEAPONS STATION
CHINA LAKE, CA 93555-6100



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FOREWORD

This report presents the status of the Coso Monitoring Program conducted for the period October 1998 through September 1999 by the Naval Air Weapons Station (NAWS), China Lake, Calif. The investigation, funded under the NAWS Coso Geothermal Development Program, is being conducted to provide baseline information on hydrology and surface geothermal activity in the Coso Hot Springs area.

This report was reviewed for technical accuracy by Steven C. Bjornstad and Allan M. Katzenstein (NAWS 83G000D).

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INTRODUCTION

The Coso Monitoring Program was initiated in 1978 to gather baseline data on the surface and near-surface geothermal activity at Devils Kitchen and Coso Hot Springs which are the main active thermal features within the Coso Known Geothermal Resource Area (Coso KGRA). These two sites are also located inside the boundaries of the Naval Air Weapons Station (NAWS), China Lake, Calif. This report represents the twenty-first consecutive year of continuous data collection at these sites by Geothermal Program Office personnel.

The format of the report for the current reporting period hasn't been changed from last year's report. A substantial body of reports has been established on this project (16 technical publications) and the project is essentially the same year to year, therefore much of the text of each report reiterates previously published information. This year's report concentrates on data presentation and interpretation and the reader is referred to the 1993/1994 summary report (Reference 1) for detailed descriptions of the overall project and the individual sites monitored.

Seasonal and diurnal variations of the thermal activity in these hot spring areas continue to be evident. Minor increases in thermal activity have been noted during this reporting period.

Monitoring sites of the Coso Hot Springs area and type of data collected at each site are presented in Table 1. The location of each site is shown in Figure 1.

TABLE 1. Monitoring Functions and Locations.

| Monitored sites | Continuous steam flow | Wellhead pressure | Periodic water level | Periodic water temperature | Water level photography | Water chemistry | Ambient temperature | Barometric pressure | Relative humidity | Wind speed and direction |
|-------------------------------------|-----------------------|-------------------|----------------------|----------------------------|-------------------------|-----------------|---------------------|---------------------|-------------------|--------------------------|
| Schober's Resort (Wells 4A-2, 3) | X | | | | | | | | | |
| Well 4A-4 | | | X ^a | X | | | | | | |
| Well 4H-4 | X | | | | | | | | | |
| Well 4P-1 | | | X ^b | X | | X | | | | |
| Well 4H-8 (Coso No. 1) | | X ^c | | X | | | | | | |
| Devils Kitchen | X | | | | | X | | | | |
| Observation Well No. 1 | | | X ^b | X | | X | | | | |
| Observation Well No. 2 | | | X ^b | | | | | | | |
| South Pool | | | X ^b | X | X | X | | | | |
| Weather Station | | | | | | | X | X | X | X |

^aLess than weekly monitoring.^bWeekly monitoring.^cWeekly shut-in wellhead pressures.

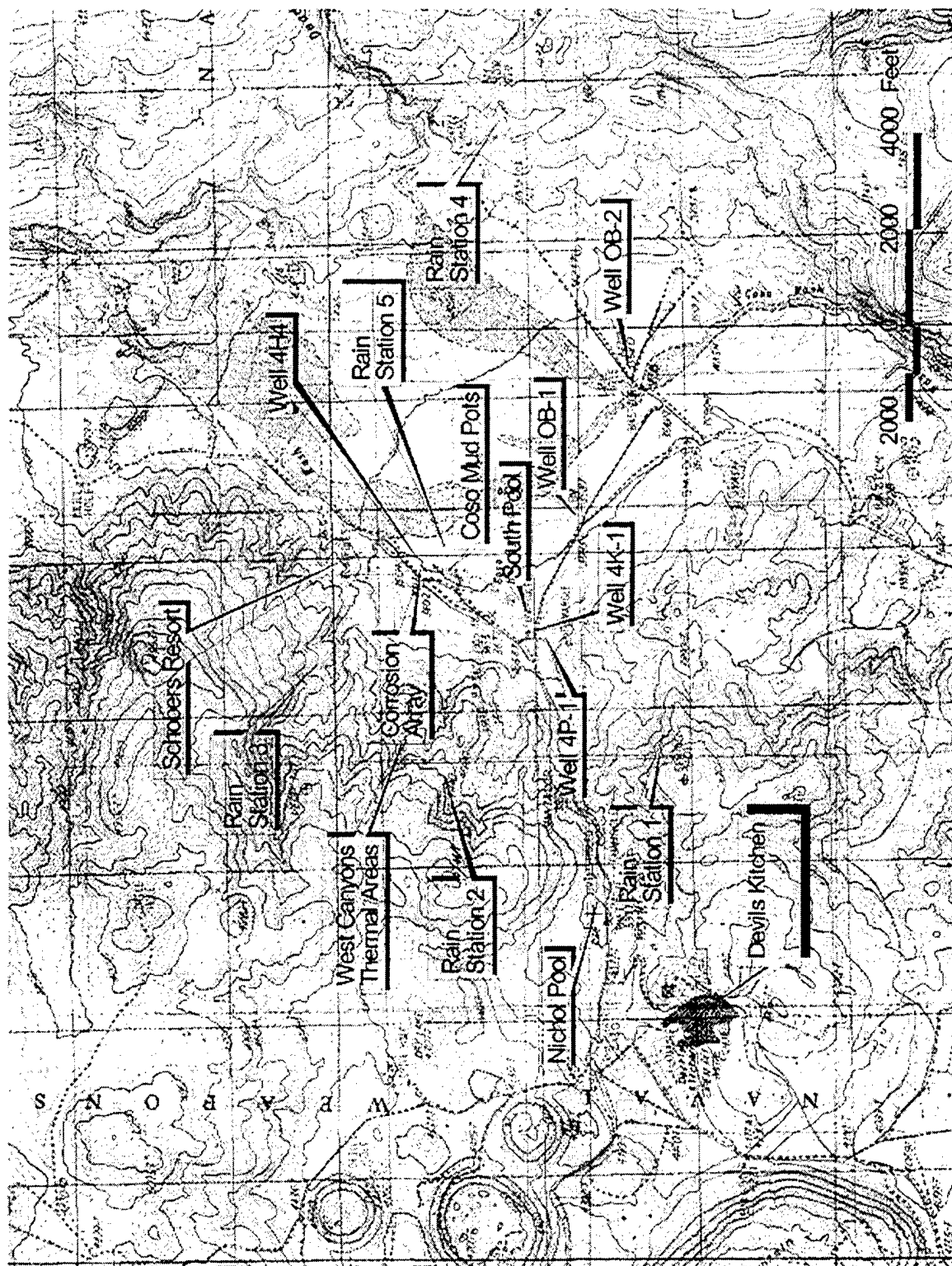


FIGURE 1. Coso Known Geothermal Resources Area Monitoring Sites.

STEAM FLOW AND TEMPERATURE MONITORING

Steam flow has been gauged at several shallow wells since the monitoring program was first initiated. While the measured steam flow from these wells represents an uncertain fraction of the total steam flow from the Coso thermal area, it does serve to monitor the relative hydrothermal activity in the area over time. Several sites are currently included in the study: Devils Kitchen, the Stove Pipe Eight-Inch Well (4H-4), and Schober's Resort (4A-2 and 3).

Steam flow data are recorded at each site using an ITT Barton differential pressure unit (DPU) AdScan recorder. The data are down-loaded to a pocket-size flash memory card. The information stored in the flash memory card is then transferred into Paradox databases.

A periodic maintenance schedule was established in-house to ensure that the recording units are maintained at peak efficiency and reliability. Additionally, a contract was established with ITT Barton for yearly maintenance and calibration of the Barton meter/AdScan units. The AdScan units were calibrated on 1 September 1998.

DEVILS KITCHEN

Steam flow at Devils Kitchen is monitored using a Barton 25-inch water DPU and AdScan recorder. Daily high and low steam flow data collected at Devils Kitchen for the period of this report are presented in the Appendix. Figure 2 shows a summary graph of Devils Kitchen steam flow activity from October 1998 through September 1999.

The steam flow data recorded at Devils Kitchen had remained very stable through 15 May 1999. From 15 May 1999 through 1 September 1999 there was a 6% decline in the apparent steam flow. On 1 September 1999, the DPU/AdScan unit was recalibrated, which caused a 9% increase in the apparent steam flow.

STOVE PIPE EIGHT-INCH STEAM WELL (4H-4)

The daily steam flow for well 4H-4 is presented in the Appendix. This site is equipped with a 50-inch water column DPU and AdScan recorder. Figure 3 shows a summary graph of steam flow activity from October 1998 through September 1999. The fluctuation of steam flow measured in the AdScan data from October 1998 through June 1999 is probably the result of increased thermal activity around the Coso Corrosion Array next to well Coso 1 (Figures 4 and 5). Since this area has become more active, the pressure built up has been relieved in the 4H-4 well area, causing a decrease in differential pressure at the 4H-4 well. The steam flow stabilized in the months of July through September 1999 at a level about 50% lower than that measured prior to October 1998.

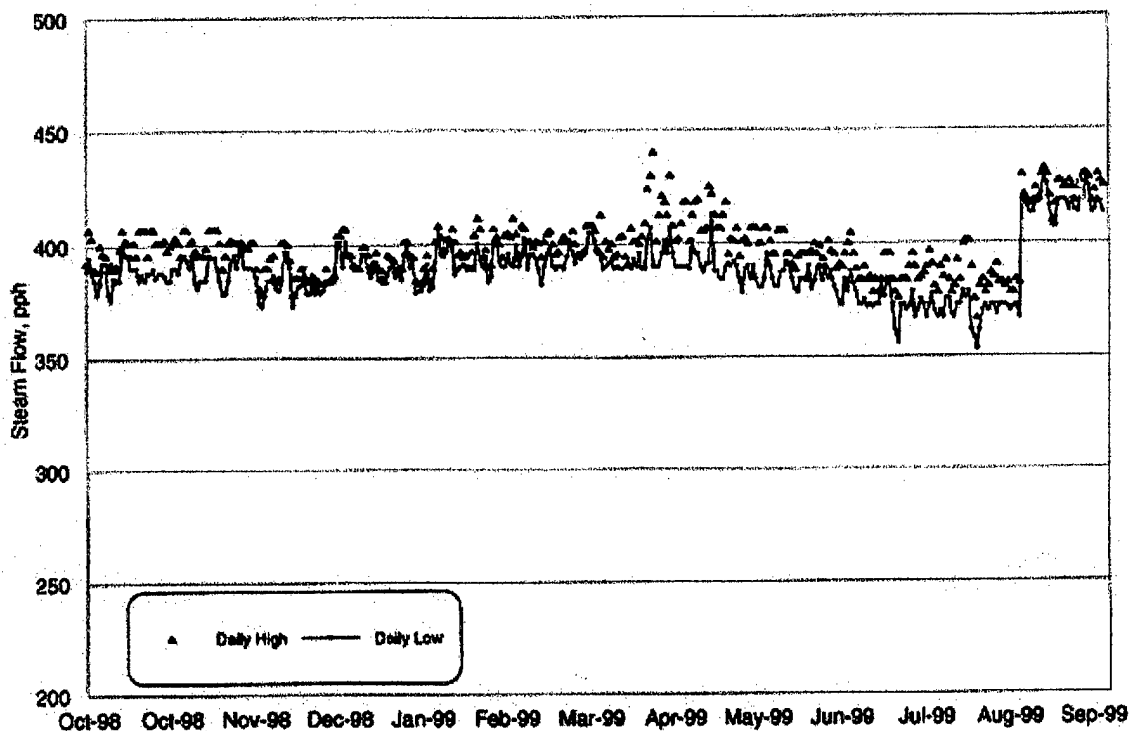


FIGURE 2. Devils Kitchen Steam Flow, October 1998 Through September 1999.

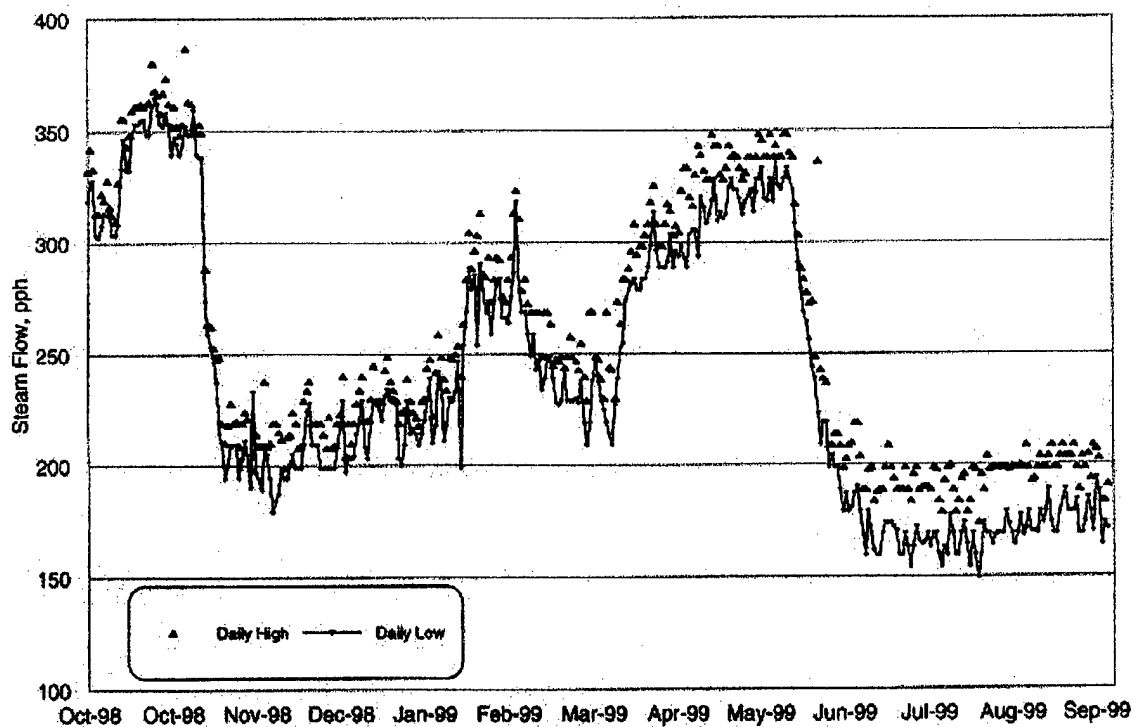


FIGURE 3. Well 4H-4 Steam Flow, October 1998 through September 1999.

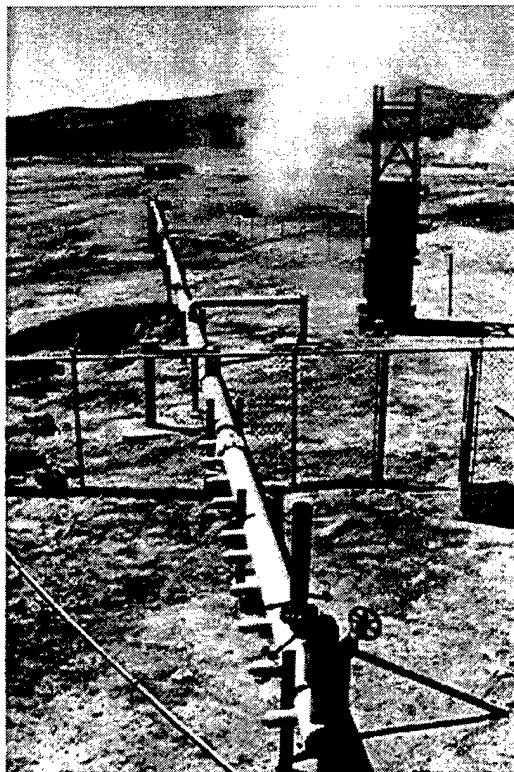


FIGURE 4. The Coso Corrosion Array, 1996.



FIGURE 5. The Coso 1 Array, 1999.

SCHOBER'S WELLS (4A-2 AND 4A-3)

The daily steam flow for wells 4A-2 and 4A-3 at Schober's Resort are presented in the Appendix. The Schober's Resort site is equipped with a 50-inch water column DPU and AdScan recorder. Figure 6 shows a summary graph of steam flow activity from October 1998 through 30 September 1999. From late October 1998 through September 1999 the steam flow data recorded at Schober's Wells has remained stable. Data covering the period of 4 August 1999 through 18 August 1999 were lost as a result of burros breaking the piping feeding the AdScan recorder unit. On 18 August 1999, the piping was replaced, but apparent steam flow at this site is much less stable than before this disturbance.

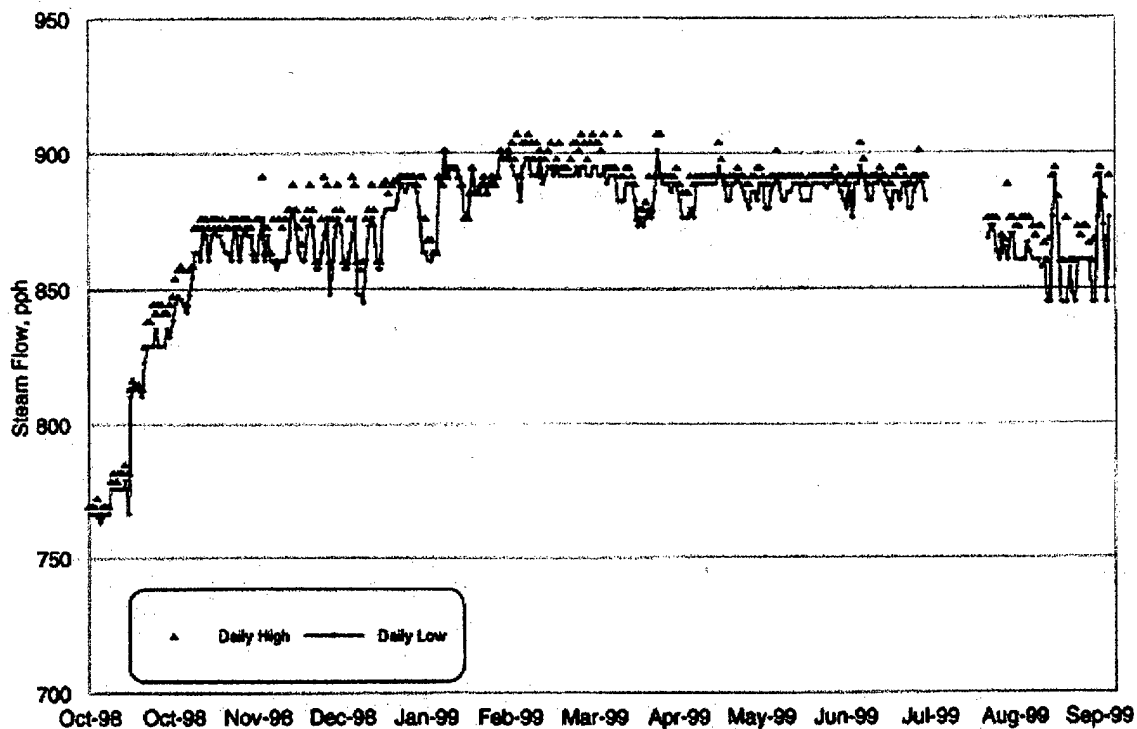


FIGURE 6. Schober's Resort Steam Flow, October 1998 Through September 1999.

COSO HOT SPRINGS MUDFIELD PHOTOGRAPHIC RECORD

A weekly photographic record was initiated in January 1978 to document the fluctuation in fluid levels in several of the more prominent mud pots in the Coso KGRA. Over the years the photo record has provided a clear picture of this hot springs thermal activity. It has demonstrated the sensitivity of the hot springs to both seasonal weather changes and individual weather events, such as summer thunderstorms. It has also chronicled the changes in thermal activity that occurred throughout the Coso Hot Springs area in the late 1980s. This weekly photo record was continued through this reporting period and is catalogued and stored at the Geothermal Program Office.

Selected photographs, Figures 7 through 16, show the typical level of thermal activity in the hot springs area throughout the past year.



FIGURE 7. Resort Mud Pot Area, August 1999.

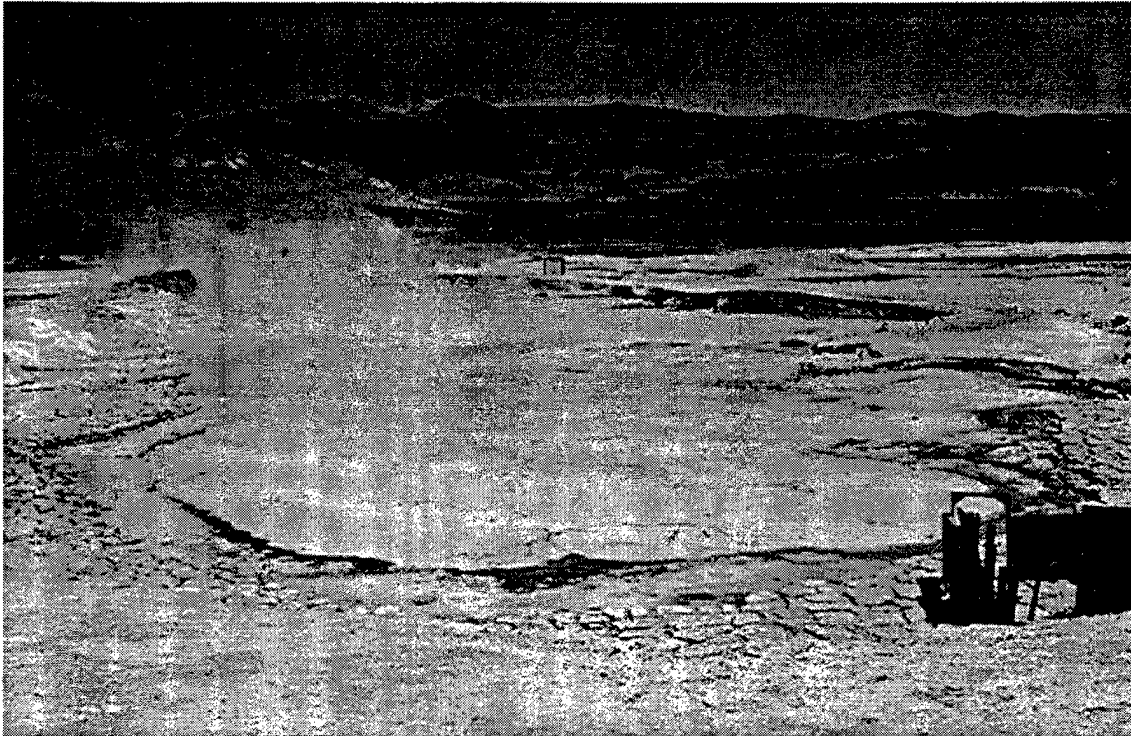


FIGURE 8. South Pool, High Water Level, April 1999.



FIGURE 9. South Pool, Low Water Level, September 1999.



FIGURE 10. Devils Kitchen Area, September 1999.



FIGURE 11. Well 4H-4 Area, September 1999.

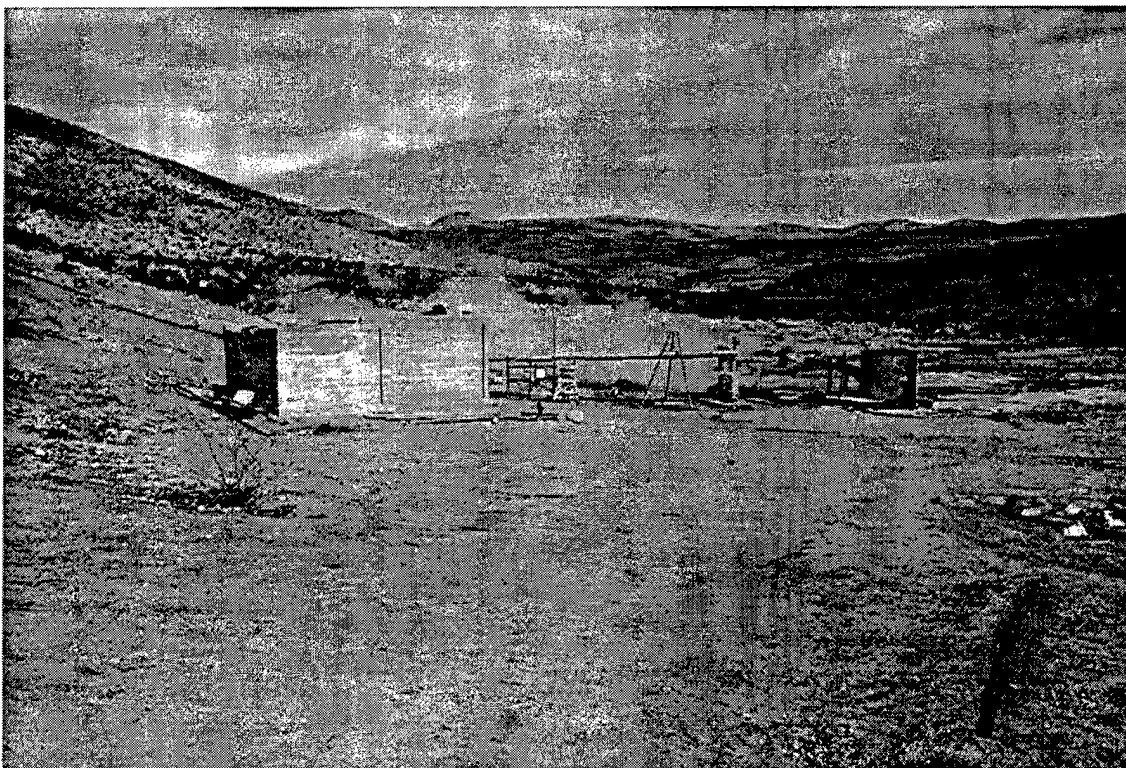


FIGURE 12. Schober's Resort Area, September 1999.

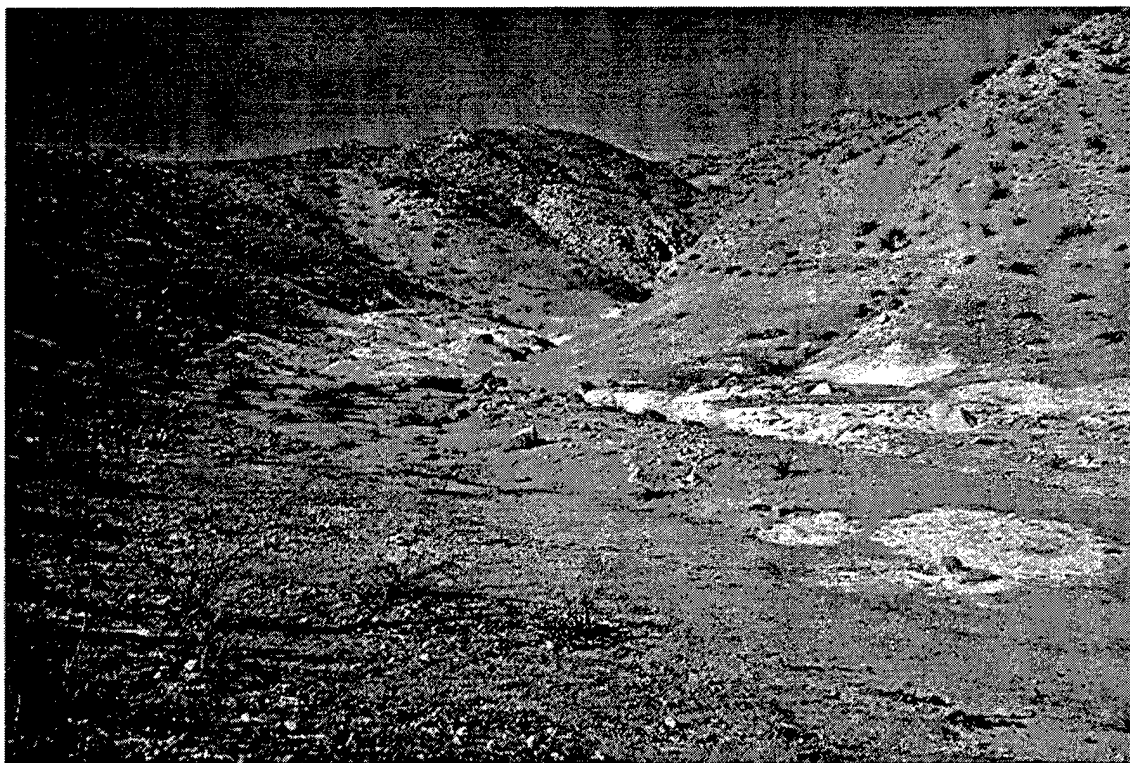


FIGURE 13. Northern West Canyon Land Slump, April 1999.

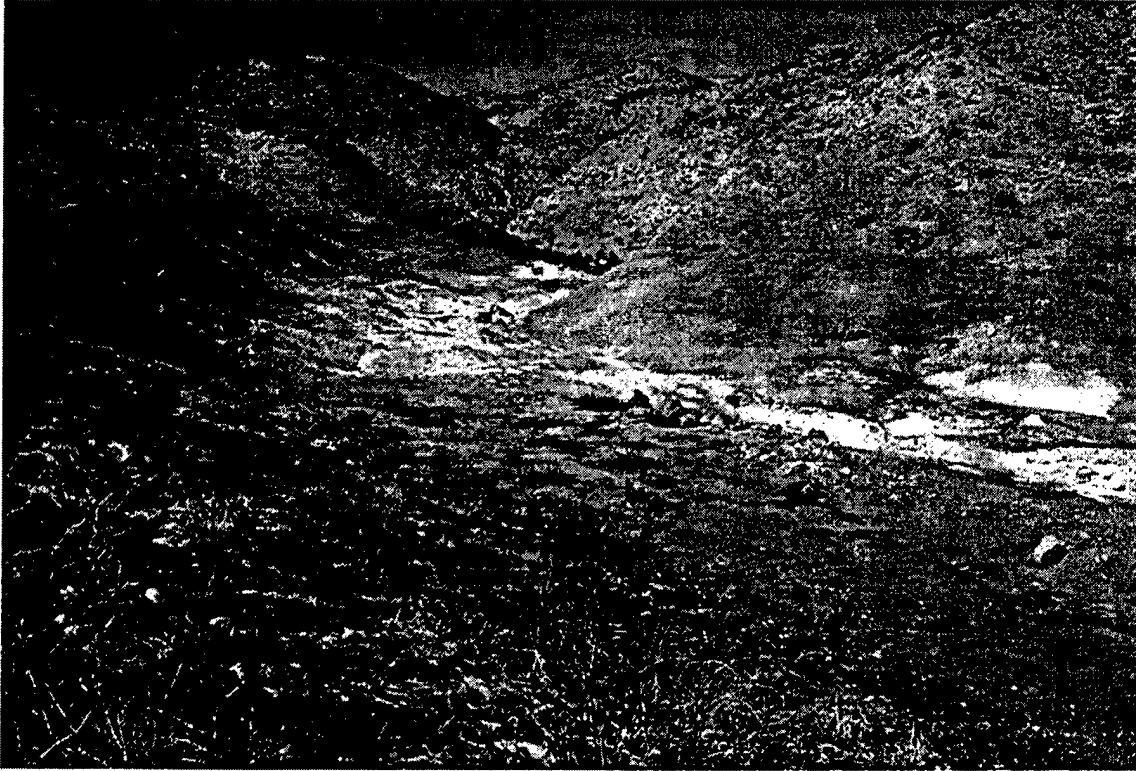


FIGURE 14. Northern West Canyon Slump, September 1999.

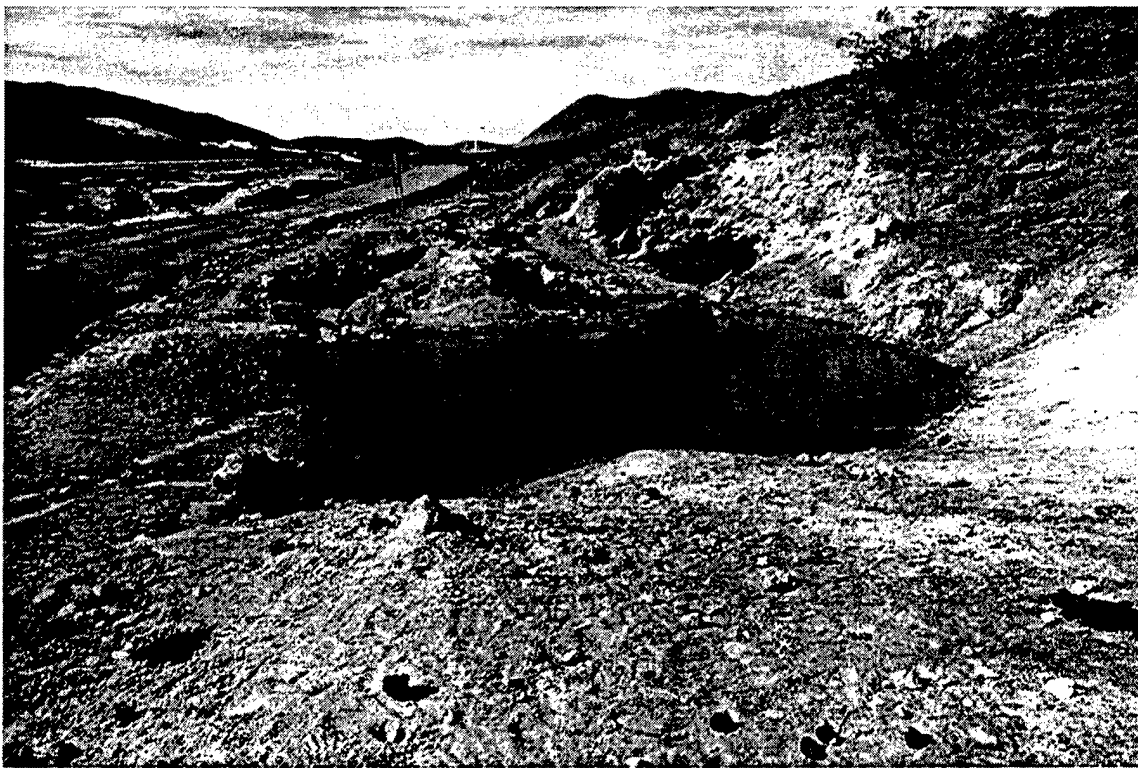


FIGURE 15. Nichol Prospect Warm Pool, March 1999.

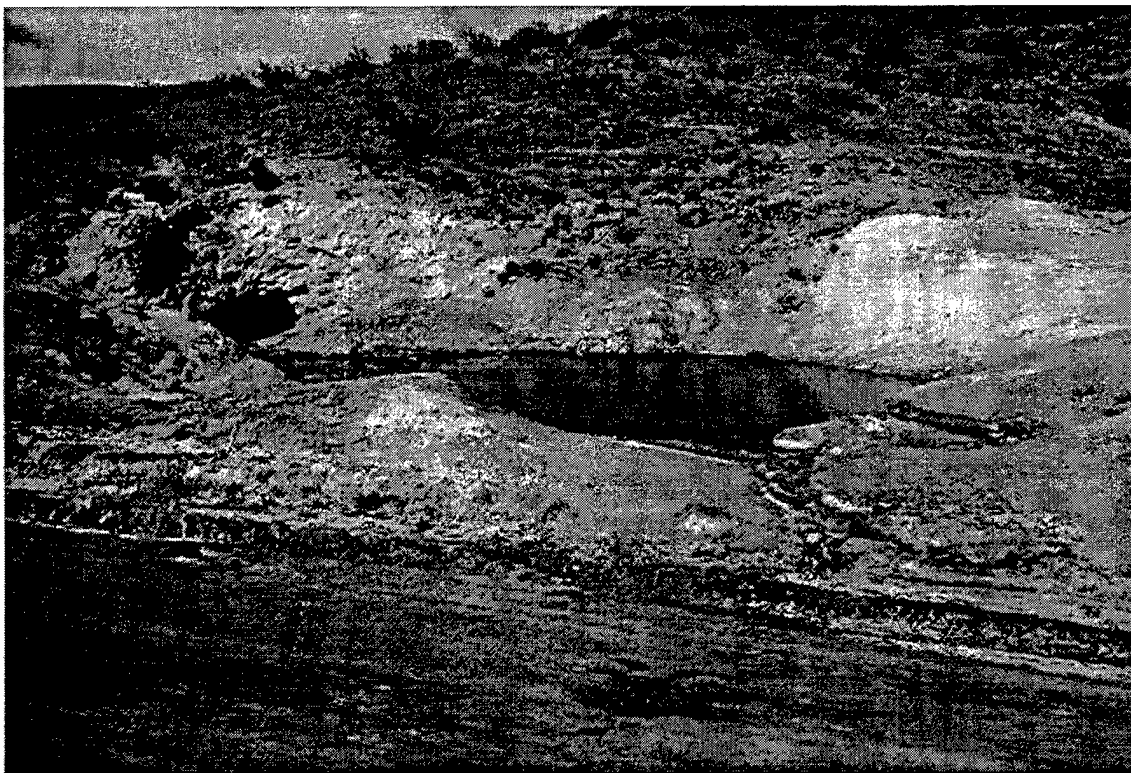


FIGURE 16. Nichol Prospect Warm Pool, August 1999.

WATER LEVEL MONITORING

OBSERVATION WELLS

Groundwater levels are monitored in four wells. Bi-weekly measurements are taken at wells 4P-1, OB-1, and OB-2, while the water level in Coso No. 1 (4H-8) is determined indirectly from temperature logs and weekly wellhead pressure readings. These level data are listed in Table 2. Figure 17 shows a summary graph of observation well water levels from 1980 to the present. Depth to water data have been translated to true elevation.

The fluid level elevation in well 4P-1 appears to have stabilized at 3612.1 feet above sea level (ASL) during this monitoring period. Well 4P-1 is a hot, steam condensate well and is located on the upthrown side of the Coso Hot Springs fault, about 150 feet west of the fault line, toward the south end of the hot springs area. It is completed in alluvial fill material. As discussed in Reference 2, this well appears to tap a small perched aquifer that is not directly connected to the regional aquifer.

Observation wells OB-1 and OB-2 are water wells located in the Upper Coso Basin about three-quarters of a mile east of the fault line. Both of these wells are completed in sedimentary valley fill material. The water level elevation in OB-1 continues to decline as described in previous reports, dropping from about 3432 feet ASL in 1988 to about 3369 feet ASL by September 1999. The water level in OB-2 declined from 3356.2 feet ASL in October 1998 to 3353.9 feet ASL in September 1999.

Coso No. 1 is located toward the north end of the Coso Hot Springs fault and is completed in bedrock. The fluid level in Coso No. 1 declined slightly from 3473 to about 3465 feet ASL between 1978 and October 1987. At that lowered fluid level, the well began to boil. The fluid level dropped rapidly to about 3410 feet ASL by September 1988, and the wellbore became plugged with salt and scale. Coso No. 1 was rehabilitated in 1993 and shut-in to reduce boiling and scaling. The 1999 fluid level (determined from the temperature gradient log) was about 3300 feet ASL.

Shut-in wellhead pressures for Coso No. 1 are recorded weekly from both the 4-inch wellbore and the 7-inch intermediate casing around the wellbore. The wellbore is completed to 370 feet in bedrock, with the intermediate casing set to 194 feet at the alluvium/bedrock interface. Table 3 is a listing of the current year's recorded pressures. Figure 18 is a summary graph of these pressures from November 1993 through September 1999.

TABLE 2. Observation Well Water Level Data.

| Date | Water level elevations, ft, above mean sea level (AMSL) | | | |
|-----------|--|--------|--------|---------------------------|
| | Ground level at well location, ft, AMSL | | | Ground level, ft, AMSL |
| | 4P-1 | OB-1 | OB-2 | Coso 1 |
| | 3662.0 | 3570.0 | 3560.0 | 3615.0 |
| | Water level measurements | | | Water level |
| | 4P-1 | OB-1 | OB-2 | Coso 1 |
| 7 Oct 98 | 3613.3 | 3372.5 | 3356.2 | |
| 14 Oct 98 | 3612.1 | | 3356.2 | |
| 21 Oct 98 | 3612.1 | | 3355.1 | |
| 28 Oct 98 | 3612.1 | 3372.2 | 3355.1 | |
| 4 Nov 98 | 3612.1 | | 3355.1 | |
| 11 Nov 98 | 3613.3 | | 3355.1 | |
| 18 Nov 98 | 3612.1 | | 3356.2 | |
| 25 Nov 98 | 3612.1 | 3372.1 | 3356.2 | |
| 2 Dec 98 | 3612.1 | | 3355.1 | |
| 9 Dec 98 | 3612.1 | | 3355.1 | |
| 16 Dec 98 | 3612.1 | | 3356.2 | |
| 23 Dec 98 | 3613.3 | | 3356.2 | |
| 30 Dec 98 | 3612.1 | 3372.0 | 3356.2 | |
| 6 Jan 98 | 3612.1 | | 3353.9 | |
| 13 Jan 99 | 3613.3 | | 3353.9 | |
| 20 Jan 99 | 3613.3 | | 3353.9 | |
| 27 Jan 99 | 3613.3 | 3371.8 | 3353.9 | |
| 3 Feb 99 | 3613.3 | | 3353.9 | |
| 10 Feb 99 | 3612.1 | | 3353.9 | |
| 17 Feb 99 | 3612.1 | | 3353.9 | |
| 24 Feb 99 | 3612.1 | 3371.8 | 3353.9 | |
| 3 Mar 99 | 3612.1 | | 3353.9 | |
| 10 Mar 99 | 3612.1 | | 3353.9 | |
| 17 Mar 99 | 3612.1 | | 3353.9 | |
| 24 Mar 99 | 3612.1 | | 3353.9 | 3300.0 |
| 31 Mar 99 | 3612.1 | 3371.0 | 3353.9 | |
| 7 Apr 99 | 3612.1 | | 3355.1 | |
| 14 Apr 99 | 3612.1 | | 3355.1 | |
| 21 Apr 99 | 3612.1 | | 3355.1 | |
| 28 Apr 99 | 3612.1 | 3370.5 | 3355.1 | |

TABLE 2. (Contd.)

| Date | Water level elevations, ft, above mean sea level (AMSL) | | | |
|-----------|--|--------|--------|---------------------------|
| | Ground level at well location, ft, AMSL | | | Ground level, ft, AMSL |
| | 4P-1 | OB-1 | OB-2 | Coso 1 |
| | 3662.0 | 3570.0 | 3560.0 | 3615.0 |
| | Water level measurements | | | Water level |
| | 4P-1 | OB-1 | OB-2 | Coso 1 |
| 5 May 99 | 3612.1 | | 3352.8 | |
| 12 May 99 | 3612.1 | | 3352.8 | |
| 19 May 99 | 3612.1 | | 3353.9 | |
| 26 May 99 | 3612.1 | 3370.0 | 3353.9 | |
| 2 Jun 99 | 3612.1 | | 3353.9 | |
| 9 Jun 99 | 3612.1 | | 3353.9 | |
| 16 Jun 99 | 3612.1 | | 3351.6 | |
| 23 Jun 99 | 3612.1 | | 3353.9 | |
| 30 Jun 99 | 3612.1 | 3369.5 | 3353.9 | |
| 7 Jul 99 | 3612.1 | | 3353.9 | |
| 14 Jul 99 | 3612.1 | | 3353.9 | |
| 21 Jul 99 | 3612.1 | | 3353.9 | |
| 28 Jul 99 | 3612.1 | 3369.5 | 3353.9 | |
| 4 Aug 99 | 3612.1 | | 3353.9 | |
| 11 Aug 99 | 3613.3 | | 3353.9 | |
| 18 Aug 99 | 3614.5 | | 3353.9 | |
| 25 Aug 99 | 3614.5 | 3369.0 | 3353.9 | |
| 1 Sep 99 | 3614.5 | | 3351.6 | |
| 8 Sep 99 | 3613.3 | | 3353.9 | |
| 15 Sep 99 | 3612.1 | | 3353.9 | |
| 22 Sep 99 | 3612.1 | | 3353.9 | |
| 29 Sep 99 | 3612.1 | 3369.0 | 3353.9 | |

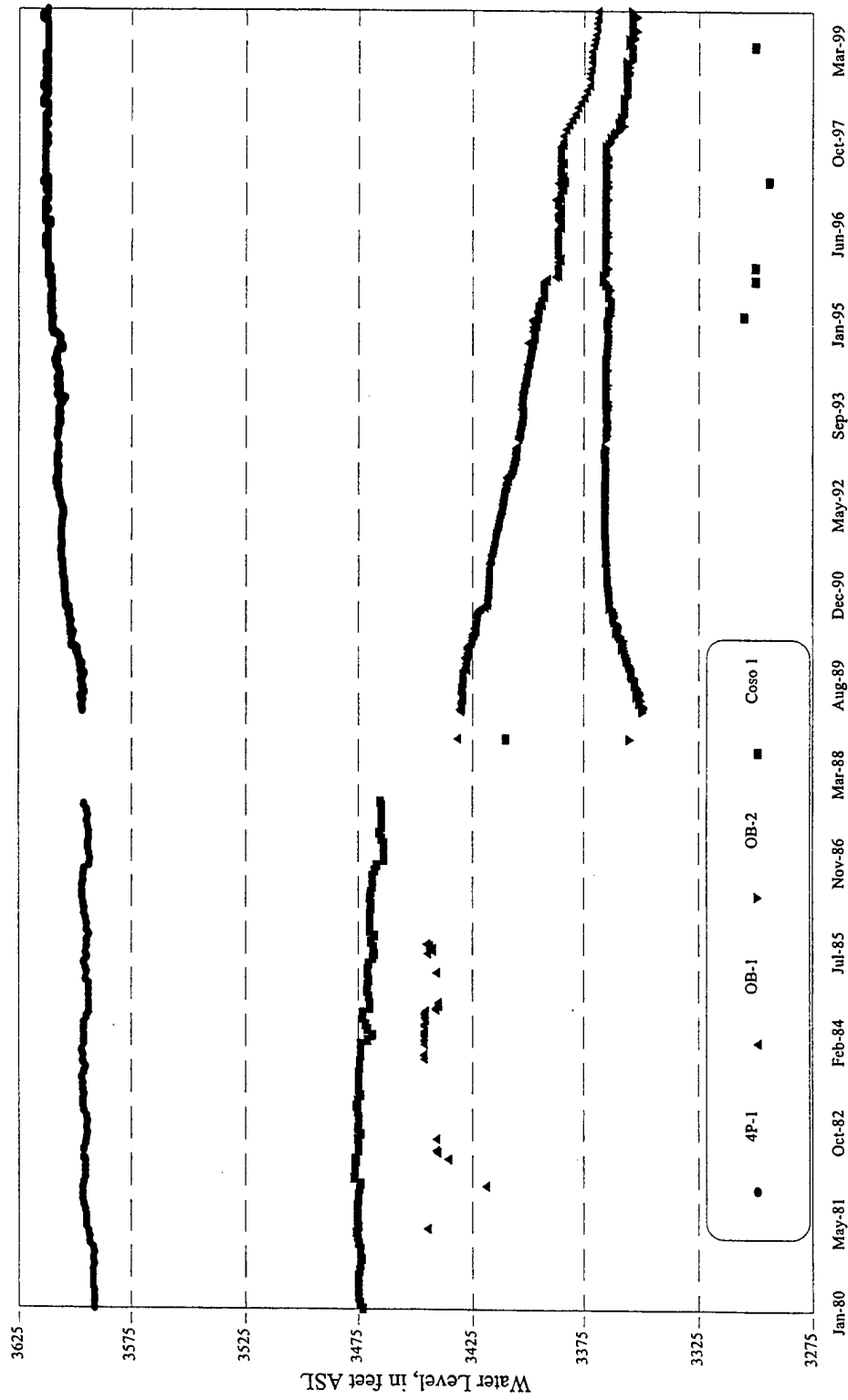


FIGURE 17. Water Levels in Coso Observation Wells, January 1980 Through September 1999.

TABLE 3. Shut-in Wellhead Pressure, Coso No. 1.

| Date | 7-inch casing (psig) | 4-inch casing (psig) |
|-----------|----------------------|----------------------|
| 7 Oct 98 | 26.5 | 22.0 |
| 14 Oct 98 | 26.5 | 22.0 |
| 21 Oct 98 | 26.0 | 22.0 |
| 28 Oct 98 | 26.5 | 22.0 |
| 4 Nov 98 | 26.5 | 22.0 |
| 11 Nov 98 | 26.0 | 22.0 |
| 18 Nov 98 | 26.0 | 22.0 |
| 25 Nov 98 | 25.5 | 22.0 |
| 2 Dec 98 | 25.0 | 21.0 |
| 9 Dec 98 | 25.0 | 21.0 |
| 16 Dec 98 | 25.5 | 21.0 |
| 23 Dec 98 | 25.5 | 21.0 |
| 30 Dec 98 | 25.5 | 21.0 |
| 6 Jan 99 | 25.0 | 20.0 |
| 13 Jan 99 | 25.5 | 21.0 |
| 20 Jan 99 | 25.5 | 21.0 |
| 27 Jan 99 | 26.0 | 21.0 |
| 3 Feb 99 | 25.5 | 21.0 |
| 10 Feb 99 | 25.5 | 21.0 |
| 17 Feb 99 | 25.0 | 21.0 |
| 24 Feb 99 | 25.0 | 21.0 |
| 3 Mar 99 | 26.0 | 21.0 |
| 10 Mar 99 | 26.0 | 22.0 |
| 17 Mar 99 | 26.0 | 21.0 |
| 24 Mar 99 | 26.0 | 21.0 |
| 31 Mar 99 | 26.0 | 22.0 |
| 7 Apr 99 | 25.5 | 22.0 |
| 14 Apr 99 | 26.0 | 22.0 |
| 21 Apr 99 | 26.0 | 22.0 |
| 28 Apr 99 | 26.5 | 22.0 |
| 5 May 99 | 27.0 | 21.0 |
| 12 May 99 | 27.0 | 23.0 |
| 19 May 99 | 27.0 | 23.0 |
| 26 May 99 | 27.0 | 23.0 |
| 2 Jun 99 | 27.0 | 23.0 |
| 9 Jun 99 | 27.5 | 23.0 |
| 16 Jun 99 | 27.0 | 23.0 |
| 23 Jun 99 | 26.0 | 21.0 |
| 30 Jun 99 | 26.0 | 21.0 |
| 7 Jul 99 | n.d. | n.d. |
| 14 Jul 99 | 26.0 | 21.0 |
| 21 Jul 99 | 25.5 | 22.0 |
| 28 Jul 99 | 25.5 | 22.0 |
| 4 Aug 99 | 25.5 | 22.0 |
| 11 Aug 99 | 26.0 | 21.0 |
| 18 Aug 99 | 25.5 | 21.0 |
| 25 Aug 99 | 26.0 | 22.0 |
| 1 Sep 99 | 25.5 | 21.0 |
| 8 Sep 99 | 26.0 | 22.0 |
| 15 Sep 99 | 26.0 | 22.0 |
| 22 Sep 99 | 26.0 | 22.0 |
| 29 Sep 99 | 26.0 | 22.0 |

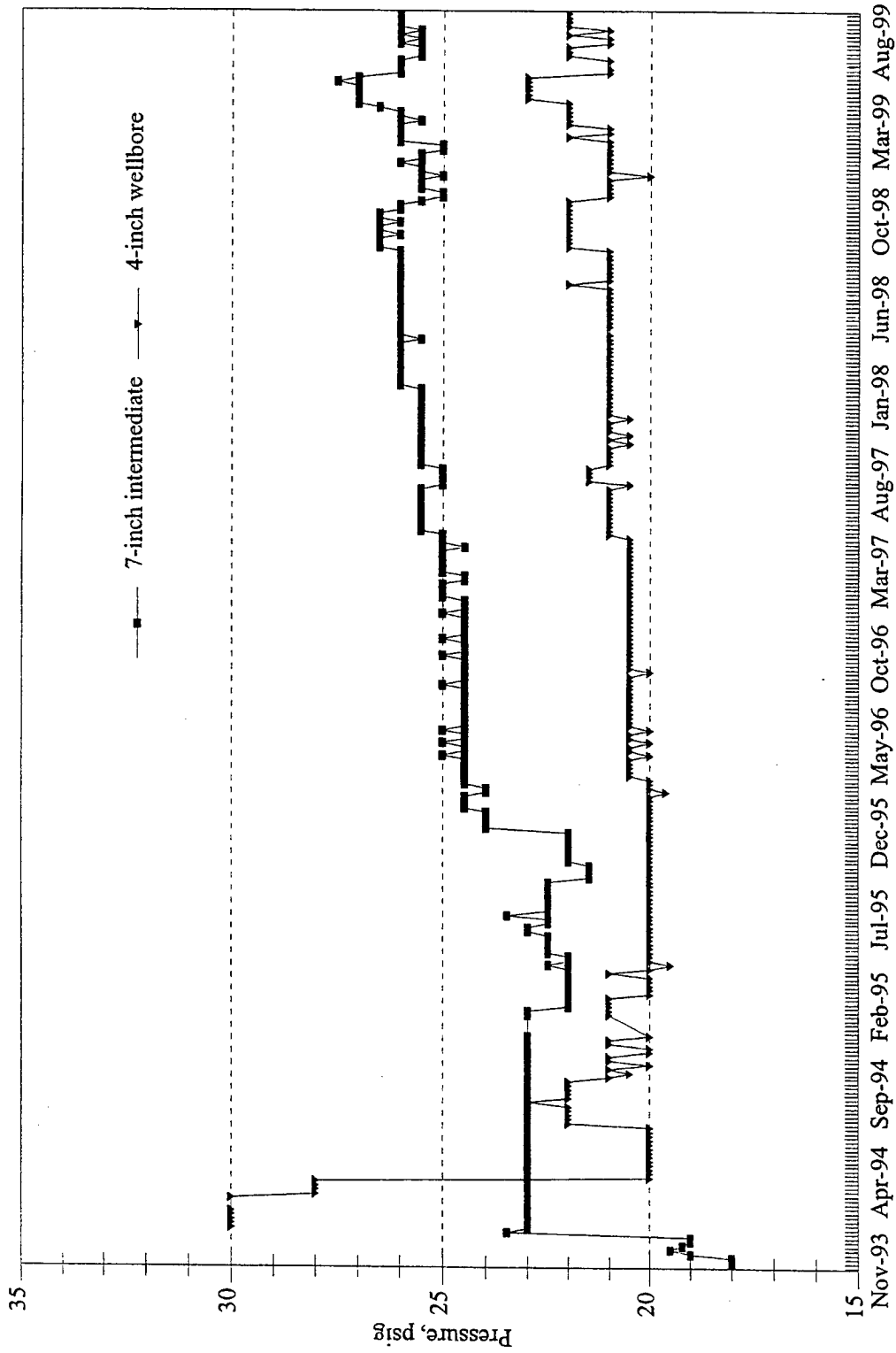


FIGURE 18. Shut-in Wellhead Pressure, Coso Well No. 1, November 1993 Through September 1999.

SOUTH POOL

The South Pool water level has continued the pattern of seasonal fluctuations throughout this reporting period, ranging from a low of 3617.5 feet in September 1999 to a high of 3621.4 feet in April 1999 (Table 4). The pool's temperature is periodically measured, as conditions permit. Water temperatures for this period continued to average above 200 degrees (F). The temperature and water elevations of the pool for January 1988 through September 1999, the period of increased activity, are shown graphically in Figure 19, while the pool elevation recorded for the entire monitoring program period is shown in Figure 20.

TABLE 4. South Pool Elevation and Temperature Changes.

| Date | Elevation, ft | Temperature, °F | Date | Elevation, ft | Temperature, °F |
|-----------|------------------|--------------------|-----------|------------------|--------------------|
| 7 Oct 98 | 3618.4 | 208 | 14 Apr 99 | 3621.4 | 203 |
| 14 Oct 98 | 3618.5 | 205 | 21 Apr 99 | 3621.4 | 204 |
| 21 Oct 98 | 3618.6 | 209 | 28 Apr 99 | 3621.4 | 205 |
| 28 Oct 98 | 3618.7 | 207 | 5 May 99 | 3621.2 | 207 |
| 4 Nov 98 | 3618.9 | 205 | 12 May 99 | 3621.1 | 204 |
| 11 Nov 98 | 3619.1 | 206 | 19 May 99 | 3621.0 | 208 |
| 18 Nov 98 | 3619.3 | 204 | 26 May 99 | 3620.9 | 209 |
| 25 Nov 98 | 3619.1 | 203 | 2 Jun 99 | 3620.8 | 210 |
| 2 Dec 98 | 3619.2 | 207 | 9 Jun 99 | 3619.9 | 208 |
| 9 Dec 98 | 3619.4 | 205 | 16 Jun 99 | 3619.8 | 209 |
| 16 Dec 98 | 3619.5 | 203 | 23 Jun 99 | 3619.8 | 209 |
| 23 Dec 98 | 3619.6 | 205 | 30 Jun 99 | 3619.8 | 210 |
| 30 Dec 98 | 3619.8 | 202 | 7 Jul 99 | 3619.7 | 210 |
| 6 Jan 99 | 3620.3 | 203 | 14 Jul 99 | 3619.7 | 211 |
| 13 Jan 99 | 3620.2 | 205 | 21 Jul 99 | 3619.2 | 209 |
| 20 Jan 99 | 3620.2 | 203 | 28 Jul 99 | 3618.3 | 208 |
| 27 Jan 99 | 3620.2 | 202 | 4 Aug 99 | 3618.1 | 210 |
| 3 Feb 99 | 3620.3 | 204 | 11 Aug 99 | 3618.0 | 210 |
| 10 Feb 99 | 3620.3 | 203 | 18 Aug 99 | 3617.9 | 209 |
| 17 Feb 99 | 3620.3 | 204 | 25 Aug 99 | 3617.8 | 209 |
| 24 Feb 99 | 3620.2 | 204 | 1 Sep 99 | 3617.7 | 207 |
| 3 Mar 99 | 3621.2 | 203 | 8 Sep 99 | 3617.7 | 206 |
| 10 Mar 99 | 3621.0 | 202 | 15 Sep 99 | 3617.6 | 205 |
| 17 Mar 99 | 3620.9 | 203 | 22 Sep 99 | 3617.5 | 211 |
| 24 Mar 99 | 3621.1 | 202 | 29 Sep 99 | 3617.5 | 210 |
| 31 Mar 99 | 3621.1 | 205 | | | |
| 7 Apr 99 | 3621.2 | 203 | | | |

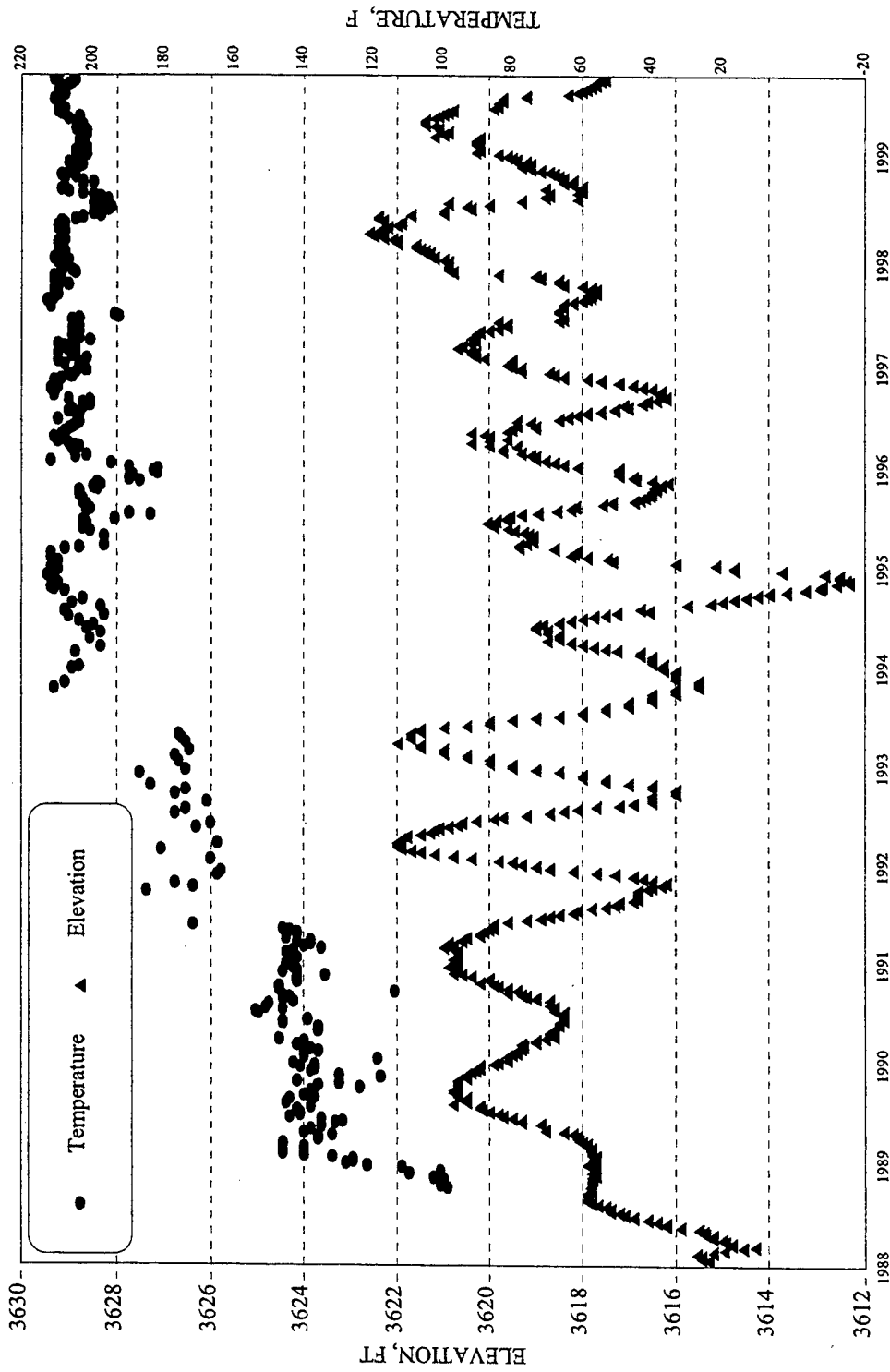


FIGURE 19. South Pool Elevation and Temperature, January 1998 Through September 1999.

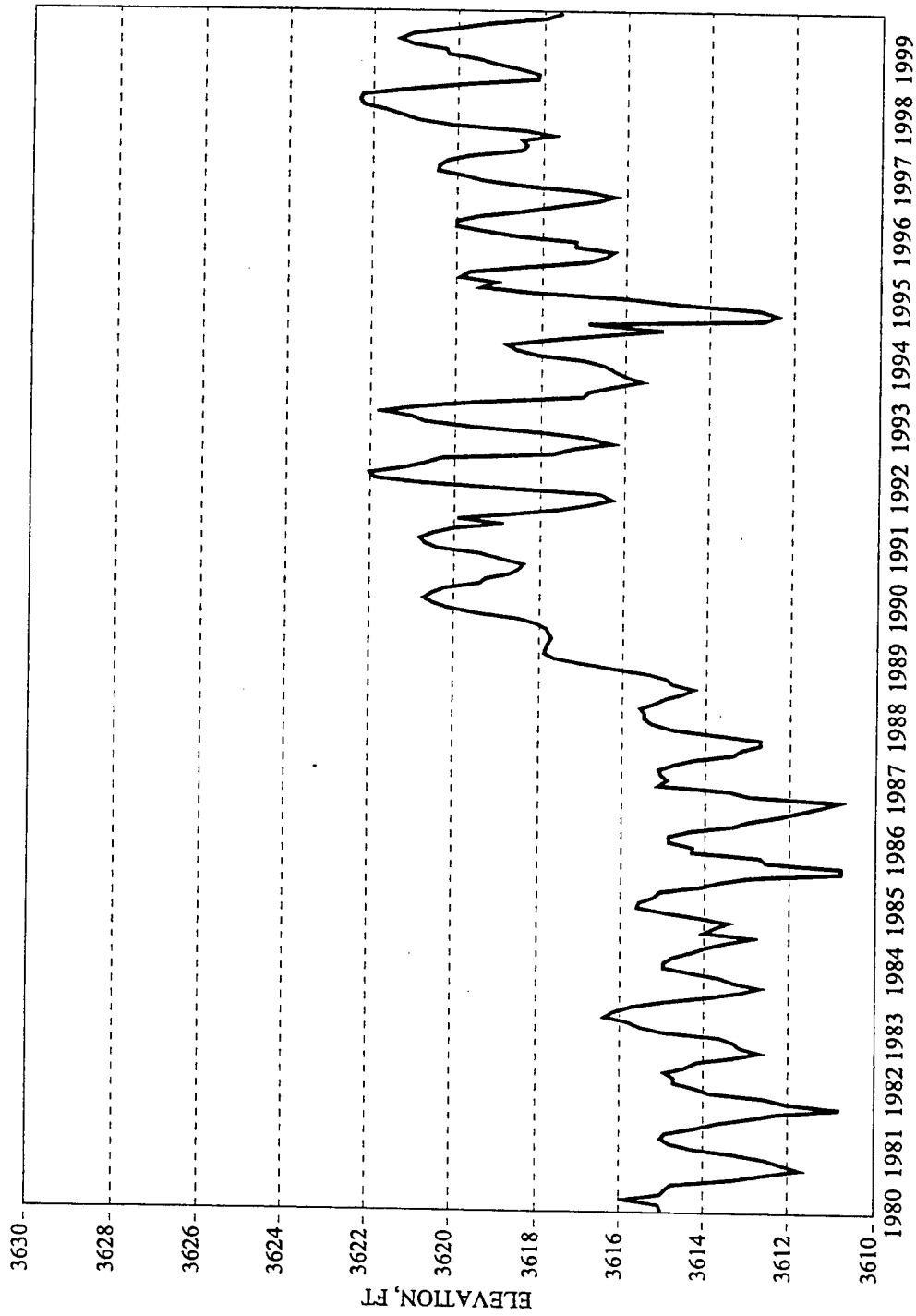


FIGURE 20. South Pool Elevations, January 1980 Through September 1999.

RAINFALL AT COSO RESORT AREA AND ROSE VALLEY

Rainfall in the Coso Hot Springs basin is monitored at five rain station sites, as mapped on Figure 1. Instrumentation at each site consists of an electronic event data logger that is triggered by a tipping bucket. The Rose Valley data are collected at the Los Angeles Department of Water and Power Haiwee Reservoir Plant.

Data from the Coso rain stations and the Rose Valley data from the Haiwee power plant are presented in Table 5 and Figure 21. Comparative rainfall data for Coso Basin, Rose Valley, and the Indian Wells Valley (IWV) for the period 1966 through 1998 are shown in Figure 22 and Table 6. IWV data were gathered at Armitage Field, Naval Air Warfare Center Weapons Division (NAWCWD), and provided by a NAWCWD meteorologist.

TABLE 5. Rainfall Recorded at the Coso Rain Stations and Rose Valley.

| Coso Hot Springs area | | | | | | Rose Valley | |
|-----------------------|---|------|------|------|------|-------------|---------------|
| Date | Tipping bucket stations (rainfall, in.) | | | | | Date | Rainfall, in. |
| | 1 | 2 | 3 | 4 | 5 | | |
| 24 Oct 98 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | | |
| 29 Oct 98 | 0.01 | 0.01 | | | | | |
| 30 Oct 98 | 0.01 | | | | 0.04 | | |
| | | | | | | 11 Nov 98 | 0.12 |
| | | | | | | 12 Nov 98 | 0.01 |
| | | | | | | 14 Nov 98 | 0.04 |
| 17 Nov 98 | 0.01 | 0.03 | | | | | |
| | | | | | | 26 Nov 98 | 0.01 |
| | | | | | | 27 Nov 98 | 0.14 |
| 28 Nov 98 | 0.04 | 0.04 | 0.03 | 0.03 | 0.04 | | |
| | | | | | | 1 Dec 98 | 0.15 |
| | | | | | | 6 Dec 98 | 0.02 |
| | | | | | | 8 Dec 98 | 0.28 |
| 16 Dec 98 | 0.01 | 0.01 | | | | | |
| 20 Jan 99 | 0.03 | | | | 0.01 | 20 Jan 99 | 0.07 |
| | | | | | | 21 Jan 99 | 0.07 |
| 24 Jan 99 | 0.03 | 0.36 | 0.02 | | 0.17 | | |
| 25 Jan 99 | 0.06 | 0.20 | | | 0.42 | 25 Jan 99 | 0.38 |
| 26 Jan 99 | 0.09 | 0.33 | 0.03 | | 0.01 | 26 Jan 99 | 0.38 |
| 31 Jan 99 | 0.04 | 0.04 | | | 0.07 | | |
| 9 Feb 99 | 0.05 | 0.04 | | 0.02 | 0.04 | 9 Feb 99 | 0.05 |
| 24 Feb 99 | | | | | 0.07 | | |
| 9 Mar 99 | | | | | 0.01 | | |
| 15 Mar 99 | 0.10 | 0.09 | 0.09 | 0.06 | 0.10 | | |
| 16 Mar 99 | 0.01 | | | | | 16 Mar 99 | 0.19 |

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TABLE 5. (Contd.)

| Coso Hot Springs area | | | | | | Rose Valley | |
|-----------------------|---|------|------|------|------|-------------|---------------|
| Date | Tipping bucket stations (rainfall, in.) | | | | | Date | Rainfall, in. |
| | 1 | 2 | 3 | 4 | 5 | | |
| 20 Mar 99 | 0.06 | 0.07 | 0.01 | | | 21 Mar 99 | 0.07 |
| 25 Mar 99 | 0.31 | 0.33 | 0.07 | 0.17 | 0.05 | 26 Mar 99 | 0.47 |
| 3 Apr 99 | | 0.01 | | | | | |
| 4 Apr 99 | | | | | 0.02 | | |
| 6 Apr 99 | 0.15 | 0.13 | 0.07 | 0.02 | 0.10 | | |
| 7 Apr 99 | 0.01 | 0.44 | | | | 7 Apr 99 | 0.21 |
| | | | | | | 8 Apr 99 | 0.01 |
| 11 Apr 99 | 0.39 | | 0.15 | 0.21 | 0.14 | | |
| 12 Apr 99 | 0.03 | 0.08 | | | | 12 Apr 99 | 0.82 |
| 23 Apr 99 | 0.01 | | | | | | |
| 24 Apr 99 | 0.07 | 0.06 | 0.01 | | | 24 Apr 99 | 0.09 |
| | | | | | | 25 Apr 99 | 0.16 |
| 29 Apr 99 | 0.05 | 0.06 | 0.07 | 0.05 | | | |
| 30 Apr 99 | 0.15 | 0.14 | 0.09 | | | 30 Apr 99 | 0.11 |
| | | | | | | 1 May 99 | 0.13 |
| 13 May 99 | | | | | 0.01 | | |
| 24 May 99 | | | 0.02 | | | | |
| 9 Jul 99 | 0.03 | 0.02 | 0.02 | 0.08 | 0.01 | | |
| 10 Jul 99 | | | | | 0.01 | 10 Jun 99 | 0.47 |
| 13 Jul 99 | 0.01 | 0.02 | 0.01 | | | | |
| | | | | | | 14 Jul 99 | 0.01 |
| 15 Jul 99 | 0.03 | 0.14 | 0.05 | 0.05 | | | |
| | | | | | | 16 Jul 99 | 0.98 |
| 17 Sep 99 | 0.01 | | 0.02 | | | 17 Sep 99 | 0.10 |
| 18 Sep 99 | 0.04 | 0.08 | 0.02 | | | | |
| 22 Sep 99 | | 0.01 | | | | | |
| TOTAL | 1.86 | 2.75 | 0.80 | 0.70 | 1.34 | TOTAL | 5.54 |

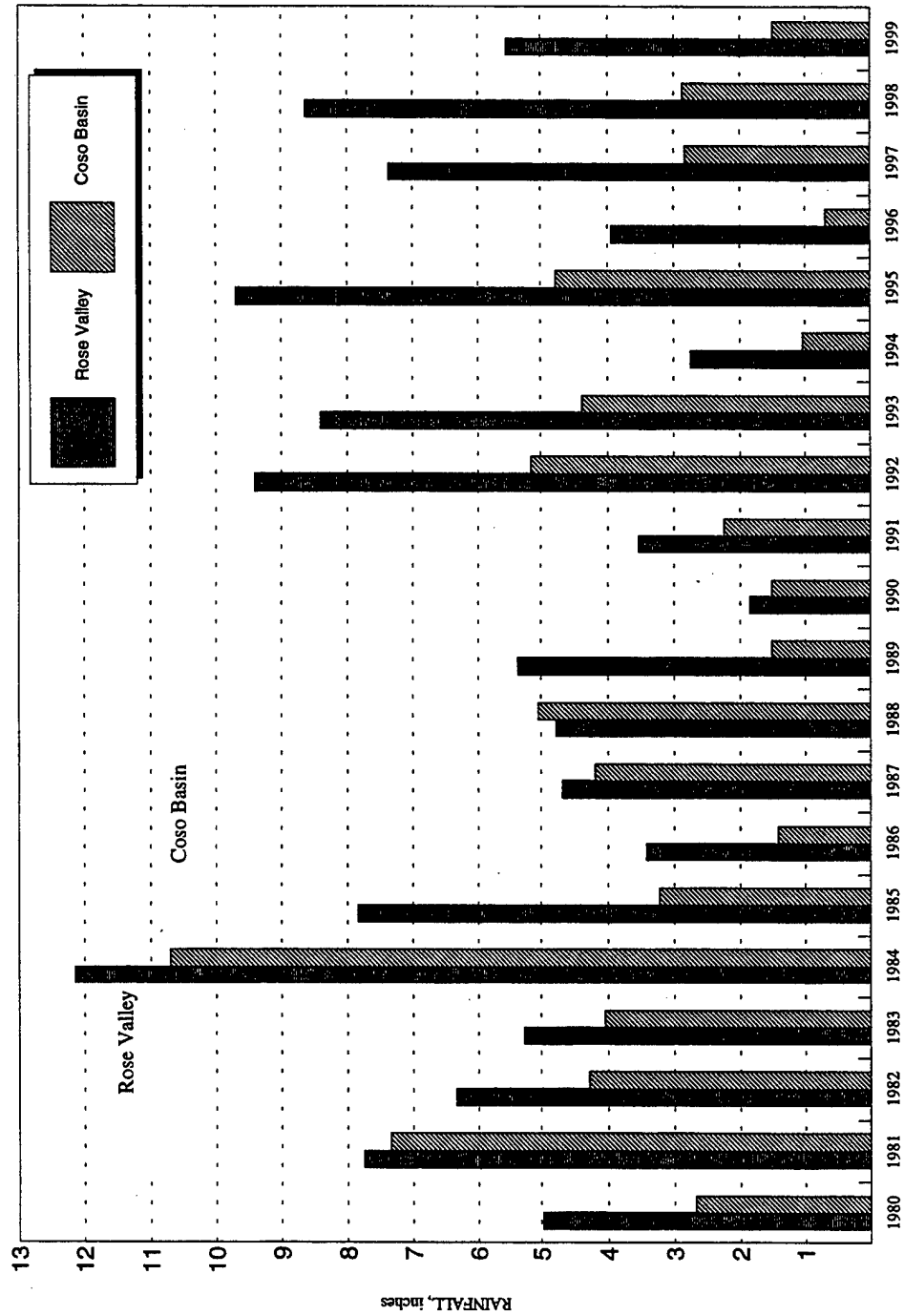


FIGURE 21. Comparison of Total Rainfall at Coso Basin and Rose Valley, Fiscal Years 1980 Through 1999.

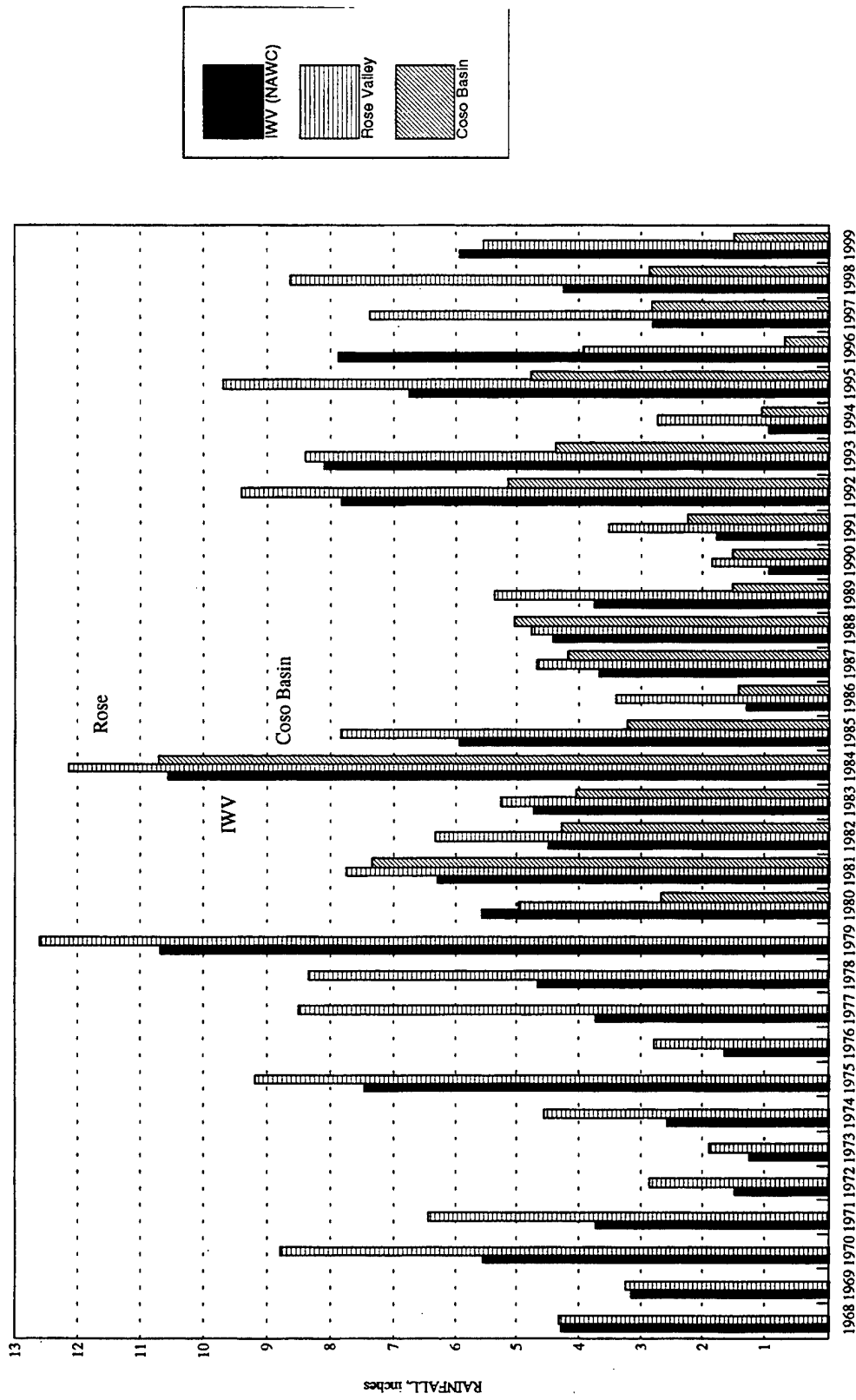


FIGURE 22. Comparison of Total Rainfall at Coso Basin, Rose Valley, and NAWC Sites, Fiscal Years 1968 Through 1999.

TABLE 6. IWV, Rose Valley, and Coso Basin Rainfall, in Inches.

| Fiscal Year | IWV | Rose Valley | Coso Basin |
|-------------|-------|-------------|------------|
| 1968 | 4.28 | 4.32 | |
| 1969 | 3.16 | 3.26 | |
| 1970 | 5.55 | 8.80 | |
| 1971 | 3.74 | 6.45 | |
| 1972 | 1.47 | 2.87 | |
| 1973 | 1.24 | 1.90 | |
| 1974 | 2.58 | 4.56 | |
| 1975 | 7.46 | 9.19 | |
| 1976 | 1.64 | 2.79 | |
| 1977 | 3.74 | 8.50 | |
| 1978 | 4.67 | 8.34 | |
| 1979 | 10.68 | 12.61 | |
| 1980 | 5.56 | 4.97 | 2.67 |
| 1981 | 6.31 | 7.75 | 7.34 |
| 1982 | 4.49 | 6.34 | 4.28 |
| 1983 | 4.73 | 5.26 | 4.05 |
| 1984 | 10.56 | 12.14 | 10.70 |
| 1985 | 5.95 | 7.84 | 3.23 |
| 1986 | 1.29 | 3.42 | 1.42 |
| 1987 | 3.68 | 4.68 | 4.19 |
| 1988 | 4.43 | 4.77 | 5.04 |
| 1989 | 3.76 | 5.36 | 1.51 |
| 1990 | 0.94 | 1.85 | 1.51 |
| 1991 | 1.78 | 3.53 | 2.24 |
| 1992 | 7.83 | 9.41 | 5.15 |
| 1993 | 8.10 | 8.4 | 4.38 |
| 1994 | 0.94 | 2.74 | 1.04 |
| 1995 | 6.76 | 9.69 | 4.78 |
| 1996 | 7.88 | 3.94 | 0.69 |
| 1997 | 2.82 | 7.37 | 2.83 |
| 1998 | 4.25 | 8.64 | 2.87 |
| 1999 | 5.94 | 5.54 | 1.49 |

**COSO HOT SPRINGS MINI-WEATHER
RECORDING STATION**

Barometric pressure, ambient temperature, relative humidity, and wind speed and wind direction are recorded at Weather Station 1, located adjacent to observation well OB-1. In March 1996 this station was integrated into the base-wide weather monitoring network. This site is maintained by NAWCWD Geophysics Operation personnel (Code 521410D).

Barometric pressure, ambient temperature, and relative humidity data are presented in Figure 23. Actual hourly data are expansive and will not be published. They are available from the Geothermal Program Office upon request.

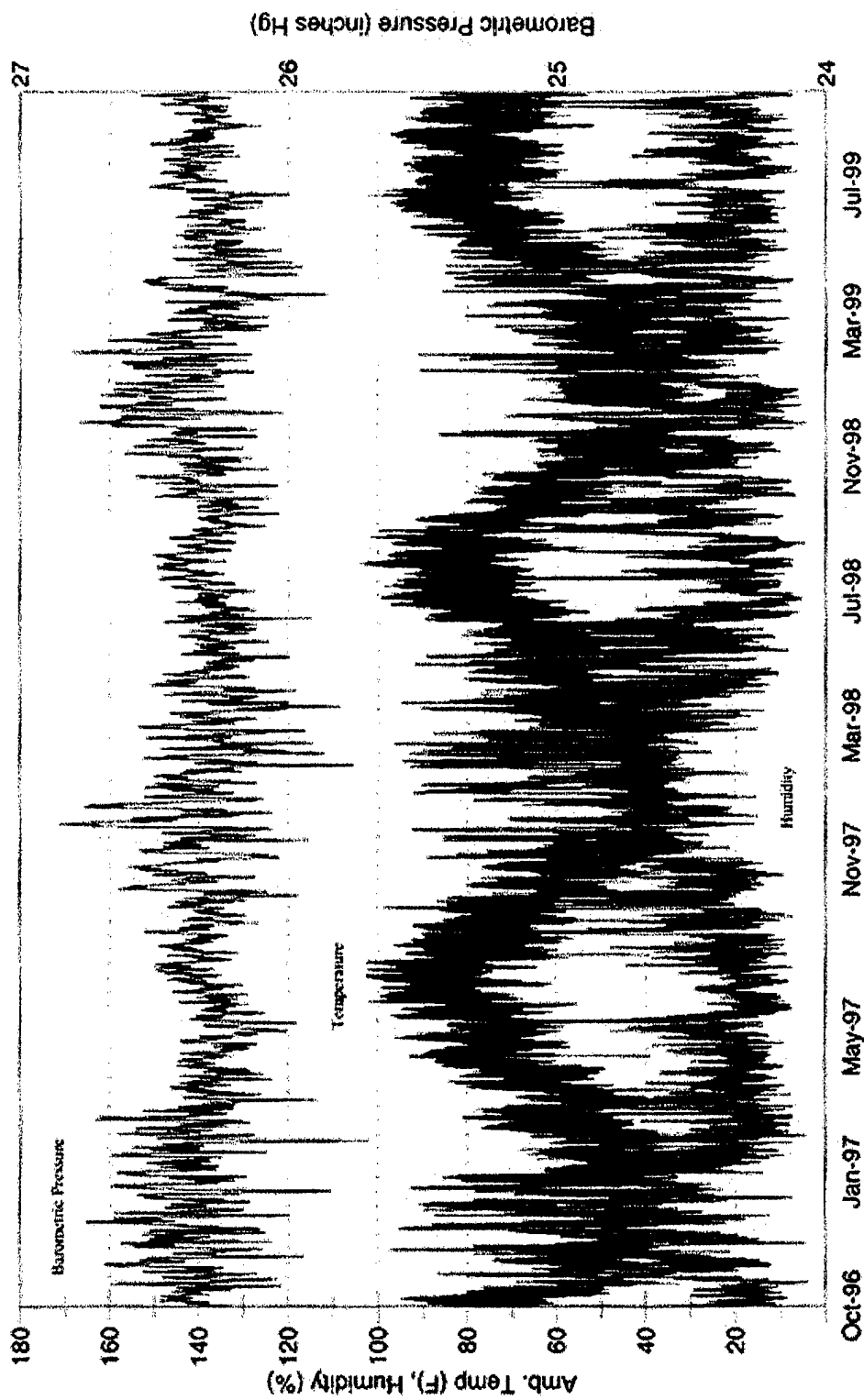


FIGURE 23. Weather Station One, Hourly Data, 1 October 1996 Through 30 September 1999.

WATER ANALYSIS OF COSO HOT SPRINGS AREA

Water samples were collected from several sites in the Coso Hot Springs area. These samples were analyzed for a suite of geothermal constituents by Western Analysis, Inc., of Salt Lake City, Utah. The results are provided in Table 7. Wells 4K-1, 4P-1, and OB-1, as well as sites at Devils Kitchen, South Pool, West Canyon, and the Nichol Pool, were analyzed.

TABLE 7. Chemical Analysis of Coso Area Surface and Near-Surface Thermal Waters.

| Constituents | Units | OB-1 03/22/99 | OB-1 09/09/99 | 4K-1 03/22/99 | 4K-1 09/09/99 | 4P-1 03/22/99 | 4P-1 09/09/99 | Devils Kitchen 03/22/99 | Devils Kitchen 09/09/99 | Nicol Pool 03/22/99 | Nicol Pool 09/09/99 | Fault Line Pool 03/22/99 | Fault Line Pool 09/09/99 | South Pool 03/22/99 | South Pool 09/09/99 | West Canyon 03/22/99 | West Canyon 09/09/99 |
|--------------|----------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------------------|-------------------------------|---------------------------|---------------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| Aluminum | mg/L | 1.020 | 0.897 | 1.130 | 1.040 | 1.130 | 1.040 | 11.900 | 16.100 | 2.490 | 2.260 | 4.780 | 14.900 | 2.060 | 1.600 | 1.360 | 1.030 |
| Antimony | mg/L | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a |
| Arsenic | mg/L | a | 0.588 | a | a | a | a | a | a | 0.696 | 0.696 | a | a | a | a | a | a |
| Bicarbonate | mg/L | 99.100 | 238.000 | 30.000 | 30.000 | 50.000 | 56.000 | a | a | a | a | a | a | a | a | a | a |
| Boron | mg/L | 51.560 | 37.900 | a | 0.414 | a | 0.259 | 2.320 | 4.450 | 18.970 | 16.990 | a | 8.520 | 6.661 | 13.200 | a | 0.133 |
| Bromide | mg/L | 2.200 | a | a | a | a | a | a | a | 6.700 | 0.145 | 14.000 | 0.110 | 15.000 | a | a | a |
| Calcium | mg/L | 57.000 | 58.900 | 2.897 | 9.683 | a | 116.600 | 50.030 | 58.510 | 35.630 | 38.500 | 93.900 | 69.700 | 134.200 | 134.900 | 63.100 | 52.840 |
| Carbonate | mg/L | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a | a |
| Chloride | mg/L | 2135.000 | 2202.000 | 11.200 | 4.480 | 133.000 | 52.200 | a | a | 810.000 | 657.000 | a | a | 2.390 | a | 9.750 | 7.020 |
| Conductivity | µmhos/cm | 6860 | 5570 | 259 | 293 | 1980 | 1670 | 4530 | 4180 | 3940 | 3450 | 1950 | 4390 | 2510 | 2030 | 1038 | 945 |
| Copper | mg/L | a | a | a | a | 0.170 | a | a | a | a | a | a | a | a | a | a | a |
| Fluoride | mg/L | 2.980 | 0.860 | 0.190 | 0.460 | 0.460 | 1.380 | 0.440 | 0.300 | 0.162 | 0.059 | 0.900 | 1.480 | 0.143 | 0.150 | 0.640 | 0.170 |
| Iron | mg/L | 10.110 | 0.770 | 7.899 | 1.590 | 1.590 | 0.678 | 43.700 | 31.600 | 21.700 | 21.980 | 54.900 | 124.000 | 86.900 | 1.280 | 3.130 | 1.747 |
| Lithium | mg/L | 10.720 | 10.420 | 0.050 | 0.130 | 0.130 | 0.149 | 0.080 | 0.090 | 2.321 | 2.308 | 0.070 | 0.770 | 0.787 | 0.050 | 0.030 | 0.034 |
| Magnesium | mg/L | 6.210 | 4.880 | 3.952 | 1.280 | 1.280 | 1.560 | 18.900 | 26.100 | 7.030 | 7.210 | 33.800 | 22.800 | 55.700 | a | 14.900 | 12.170 |
| Manganese | mg/L | 2.900 | 0.084 | 0.200 | 0.285 | 1.090 | 0.773 | 1.470 | 1.590 | 0.761 | 0.685 | 3.840 | 1.540 | 4.582 | 3.400 | 2.630 | 1.751 |
| Mercury | ppb | 7.6 | a | 5.8 | a | 6.4 | a | < 0.5 | a | 1.3 | a | 0.5 | a | < 0.5 | a | 0.9 | a |
| pH | pH units | 6.63 | 8.81 | 6.62 | 5.88 | 6.15 | 6.34 | 1.98 | 2.23 | 2.52 | 2.59 | 2.79 | 2.66 | 3.26 | 4.37 | 5.10 | 4.94 |
| Potassium | mg/L | 99.800 | 108.800 | 8.114 | 9.273 | 105.100 | 102.500 | 28.900 | 32.160 | 86.900 | 87.400 | 27.280 | 28.900 | 26.800 | 50.990 | 27.400 | a |
| Selenium | ppb | < 10 | 14 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 25 | < 10 | < 10 | < 10 | 12 | 11 | < 10 | 12 |
| Silica | mg/L | a | 11.390 | 487.400 | 205.800 | 487.400 | 162.900 | 373.500 | 233.900 | 437.500 | 299.500 | 383.900 | 263.700 | 241.700 | 158.990 | 309.600 | 201.700 |
| Sodium | mg/L | 1210.000 | 1270.000 | 45.030 | 45.030 | 233.500 | 221.400 | 38.500 | 50.250 | 483.700 | 488.900 | 71.110 | 131.900 | 99.900 | 47.900 | 93.120 | 78.580 |
| Strontium | mg/L | 3.460 | 3.824 | 0.217 | 0.420 | 1.880 | 1.874 | 0.090 | 0.100 | 0.171 | 0.224 | 0.430 | 0.430 | 0.254 | a | 0.190 | 0.156 |
| Sulfate | mg/L | 2.450 | 3.950 | 48.100 | 150.000 | 762.000 | 894.000 | 1020.000 | 865.000 | 421.000 | 324.000 | 657.000 | 1040.000 | 1075.000 | 527.000 | 362.000 | 305.000 |
| TDS | mg/L | 3740 | 3850 | 399 | 452 | 1905 | 1457 | 4530 | 1297 | 2280 | 1933 | 1390 | 1805 | 1770 | 971 | 920 | 679 |
| Thallium | PPM | < 0.20 | < 0.1 | < 0.20 | < 0.1 | < 0.20 | < 0.1 | < 0.20 | < 0.1 | < 0.20 | < 0.1 | < 0.20 | < 0.1 | < 0.20 | < 0.1 | < 0.20 | < 0.1 |
| Zinc | mg/L | 1.750 | 0.801 | 0.217 | 0.233 | 3.420 | 1.208 | 0.160 | 0.110 | 0.151 | 0.308 | 0.760 | 2.070 | 0.845 | 0.130 | 0.180 | 0.940 |

a (none detected)

TEMPERATURE RECORDINGS OF THE COSO RESORT AREA WELLS

The temperature logs from wells 4K-1, 4P-1, and Coso 1 are graphed in Figure 24, with the data listed in Tables 8 through 10. OB-1 is nearly dry, so there is no temperature log. These data were recorded by Geothermal Office personnel using the TD Probe System, manufactured by Natural Progress Instruments, Dallas, Texas.

TABLE 8. Temperature Recordings at Well 4K-1.

| Depth, ft | Elevation, ft AMSL | Temperature °F on 24 Mar 99 | Temperature °F on 22 Sep 99 |
|-----------|--------------------|--------------------------------|--------------------------------|
| -0 | 3658 | 205.6 | 205.8 |
| -5 | 3653 | 205.7 | 205.8 |
| -10 | 3648 | 205.7 | 205.8 |
| -15 | 3643 | 205.7 | 205.8 |
| -20 | 3638 | 205.7 | 205.8 |
| -25 | 3633 | 205.7 | 205.8 |
| -30 | 3628 | 205.7 | 205.8 |
| -35 | 3623 | 205.7 | 205.8 |
| -40 | 3618 | 205.7 | 205.8 |
| -45 | 3613 | 205.7 | 205.8 |
| -50 | 3608 | 206.5 | 205.8 |
| -55 | 3603 | 210.9 | 208.7 |
| -60 | 3598 | 212.8 | 210.8 |
| -65 | 3593 | 214.2 | 214.2 |
| -70 | 3588 | 215.0 | 213.8 |
| -75 | 3583 | 216.8 | 216.2 |
| -80 | 3578 | 218.5 | 216.7 |
| -85 | 3573 | 216.8 | 215.9 |
| -88 | 3568 | 216.7 | 216.1 |

TABLE 9. Temperature Recordings at Well 4P-1.

| Depth, ft | Elevation, ft AMSL | Temperature °F on 24 Mar 99 | Temperature °F on 22 Sep 99 |
|-----------|--------------------|--------------------------------|--------------------------------|
| 0 | 3662 | 202.0 | 192.7 |
| -5 | 3657 | 202.0 | 205.9 |
| -10 | 3652 | 202.0 | 206.0 |
| -15 | 3647 | 202.0 | 205.9 |
| -20 | 3642 | 202.0 | 205.9 |
| -25 | 3637 | 202.0 | 205.9 |
| -30 | 3632 | 202.1 | 206.0 |
| -35 | 3627 | 202.1 | 206.0 |
| -40 | 3622 | 202.1 | 206.0 |
| -45 | 3617 | 202.1 | 206.0 |
| -50 | 3612 | 206.8 | 206.0 |
| -55 | 3607 | 211.2 | 209.0 |
| -60 | 3602 | 215.0 | 212.8 |
| -65 | 3597 | 220.2 | 218.0 |
| -70 | 3592 | 222.8 | 222.6 |
| -75 | 3587 | 223.6 | 223.3 |
| -80 | 3582 | 225.5 | 224.4 |
| -85 | 3577 | 226.7 | 226.1 |
| -90 | 3572 | 231.3 | 227.8 |
| -95 | 3567 | 237.7 | 233.3 |
| -100 | 3562 | 240.6 | 240.3 |
| -105 | 3557 | 240.7 | 240.5 |
| -107 | 3552 | 240.7 | 240.5 |

TABLE 10. Temperature Recordings at Coso 1.

| Depth, ft | Elevation, ft AMSL | Temperature °F on 24 Mar 99 |
|-----------|--------------------|--------------------------------|
| 0 | 3615 | 252.7 |
| -20 | 3595 | 255.6 |
| -40 | 3575 | 255.6 |
| -60 | 3555 | 255.6 |
| -80 | 3535 | 255.4 |
| -100 | 3515 | 255.4 |
| -120 | 3495 | 255.4 |
| -140 | 3475 | 255.4 |
| -160 | 3455 | 255.4 |
| -180 | 3435 | 255.4 |
| -200 | 3415 | 255.4 |
| -220 | 3395 | 255.4 |
| -240 | 3375 | 255.4 |
| -260 | 3355 | 255.4 |
| -280 | 3335 | 255.4 |
| -300 | 3315 | 255.4 |
| -305 | 3310 | 255.6 |
| -310 | 3305 | 256.1 |
| -315 | 3300 | 260.4 |
| -320 | 3295 | 264.2 |
| -340 | 3275 | 266.5 |
| -360 | 3255 | 269.1 |
| -365 | 3250 | 269.1 |

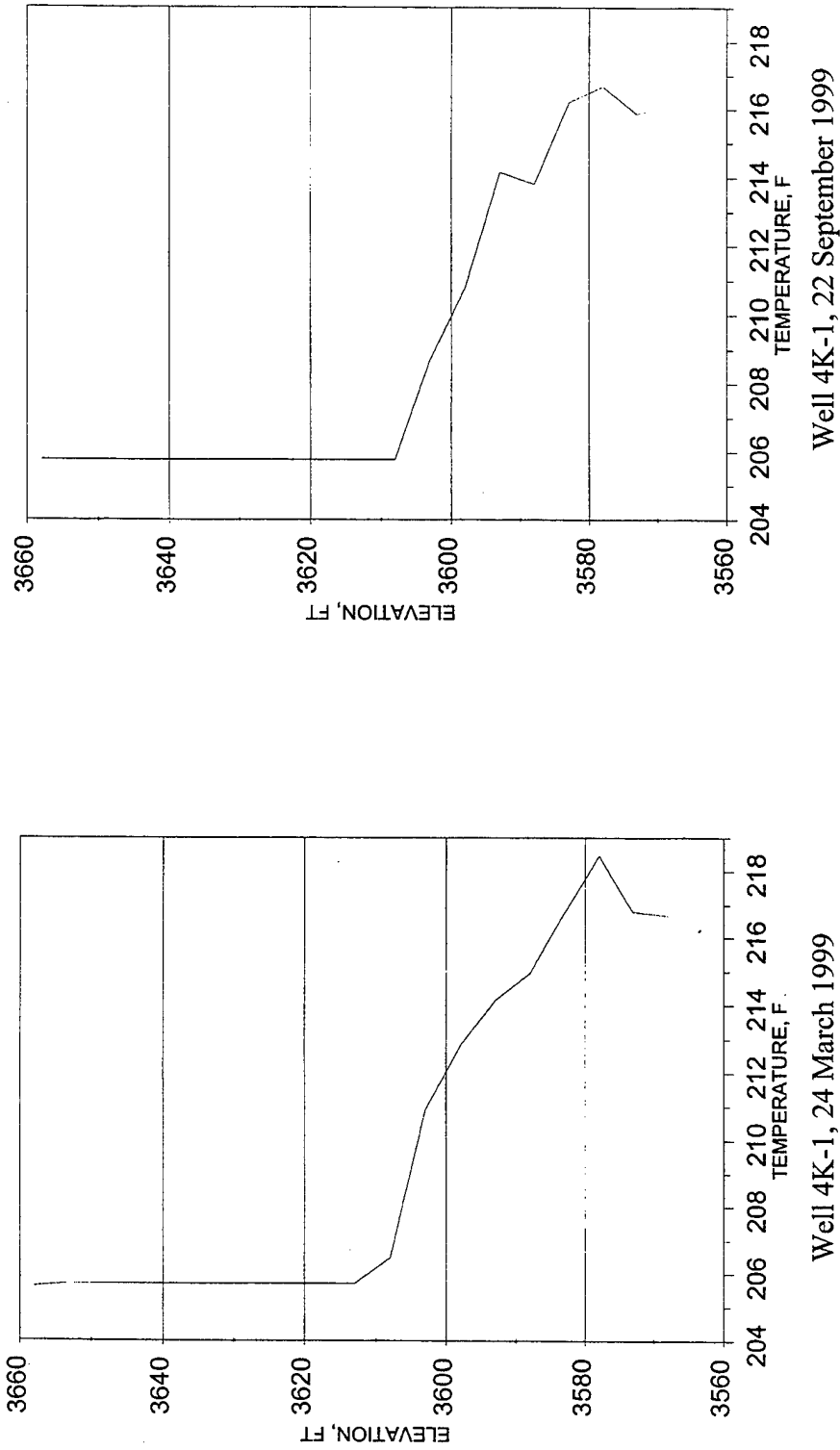


FIGURE 24. Temperature Gradient Logs, Wells 4K-1, 4P-1, and Coso No. 1.

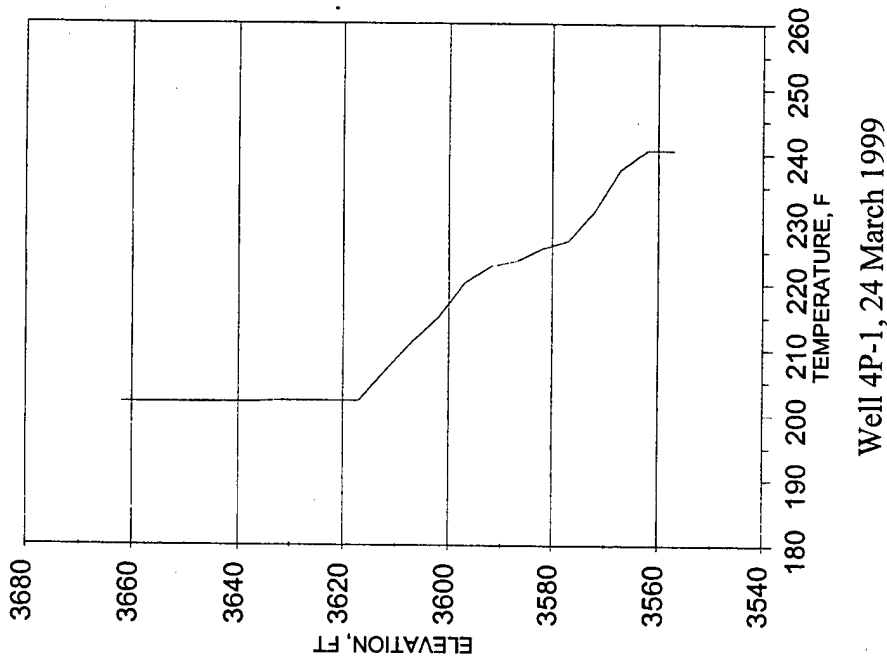
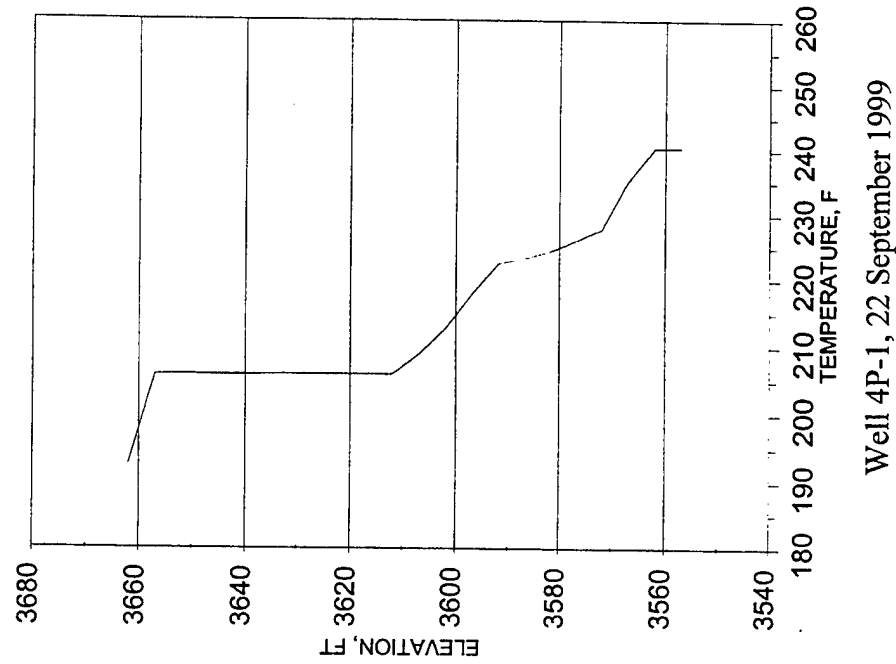
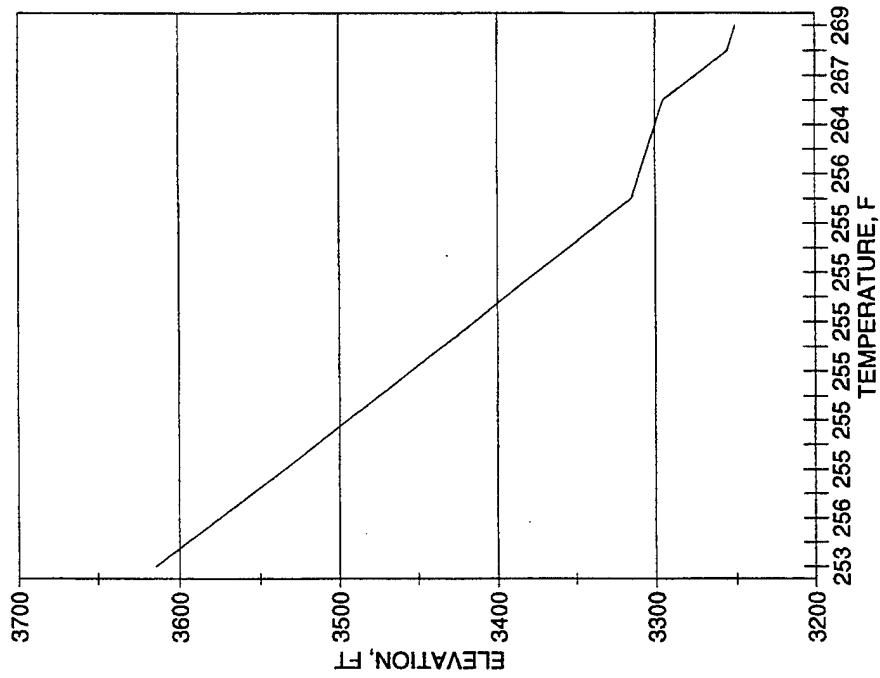


FIGURE 24. (Contd.)



Coso No. 1, 24 March 1999

FIGURE 24. (Contd.)

OTHER GEOTHERMAL ACTIVITY AT COSO HOT SPRINGS

WEST CANYONS

The two west canyons are located approximately 0.7 km west of the Coso Resort area (Figure 1) and on a course perpendicular to the strike-slip fault that runs north and south through the Coso Hot Springs area.

The southerly canyon, which has rain station No. 2 located at the west end, consists of hydrothermal alteration and scattered thermal activity both in the canyon and a wide area at the mouth of the canyon. The geology of this canyon indicates an extensive history of fluctuating thermal activities and features. The prominent area of present activity in the canyon includes an active steam vent bordering a vigorously boiling pool. At a greater distance up the canyon are two diminutive steam vents, small springs and fossil hot spring terrace deposits. Thermal activity in these areas is sporadic, depending upon climatic conditions. Some notable changes in the level of thermal activity have occurred here during this reporting period. A small but steady increase in the fluid discharge from the west canyon area has been noted. It has been demonstrated using geochemistry (both elemental and stable isotope) that the water levels in the shallow pools of the Coso Hot Springs area are not significantly affected by local rainfall.

The northerly west canyon holds an extensive area of hydrothermal alteration and fossil hot spring deposits. Present thermal activity is limited to warm-to-hot ground with a small number of steam vents. The earth slump, first noted in NAWS-CL TP 001, has continued to stabilize during the past year. Much of the slump area is warm-to-hot, with steam emanating from multiple vents, specifically along the face of the slump. The small pools of mud and steam condensate, noted in last year's summary, are still present to the west of the slump.

One of the indicators of newly heated ground is the die-off of vegetation. There is small increase of heated ground just east of the west canyon area, we will continue monitoring the area during the next reporting period.

DISCUSSION AND SUMMARY

During this reporting period, the central Coso Fault thermal area has changed moderately. The thermal area includes the Coso Corrosion Array, the Coso Resort mudfield, the South Pool, and the smaller pools and pots in between. New thermal manifestation in the Coso Corrosion Array area includes several small mud pots and fumaroles around the existing wells.

In May and June the largest mud pot in the Coso Corrosion Array area increased in activity; at the same time the pressure at Coso 1 (Figure 18) slightly increased and the pressure at 4H-4 decreased tremendously.

The increased activity in the Coso Corrosion Array mud pots, the Coso 1 increase in shut-in well pressure, and the decrease in pressure at the Stove Pipe Eight-Inch Steam Well (4H-4) seem to be correlated since they occurred in the same time period.

The overall activity of the entire Hot Springs has remained nearly stable, with the normal seasonal fluctuations in fluid activity and some slight increases in hot spots as noted in the report.

PLANS FOR FISCAL YEAR 2000

We will continue to monitor, visually and photographically, the new mud pots and increased activity around the Coso Corrosion Array and other areas in the hot springs.

REFERENCES

1. Naval Air Weapons Station. Coso Monitoring Program, October 1993 Through September 1994, by S. C. Bjornstad, Public Works Department, J. H. Monahan, J. K. Sprouse and D. M. White, Comarco Weapons Support Division, Ridgecrest, Calif. China Lake, Calif., NAWS-CL, January 1995. 106 pp. (NAWS-CL TP 006, publication UNCLASSIFIED.)
2. ———. Coso Monitoring Program, October 1991 Through September 1992, by J. H. Monahan and K. L. Larson, Comarco Weapons Support Division, Ridgecrest, Calif. China Lake, Calif., NAWS-CL, December 1992. 123 pp. (NAWS-CL TP 001, publication UNCLASSIFIED.)

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Appendix

DAILY STEAM FLOW

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 10/01/98 | 332 | 318 | 10/01/98 | 770 | 767 | 10/01/98 | 392 | 389 |
| 10/02/98 | 342 | 327 | 10/02/98 | 770 | 767 | 10/02/98 | 407 | 395 |
| 10/03/98 | 333 | 328 | 10/03/98 | 770 | 767 | 10/03/98 | 404 | 389 |
| 10/04/98 | 313 | 303 | 10/04/98 | 773 | 767 | 10/04/98 | 390 | 384 |
| 10/05/98 | 313 | 302 | 10/05/98 | 767 | 763 | 10/05/98 | 389 | 378 |
| 10/06/98 | 322 | 307 | 10/06/98 | 770 | 767 | 10/06/98 | 400 | 383 |
| 10/07/98 | 319 | 313 | 10/07/98 | 770 | 767 | 10/07/98 | 397 | 392 |
| 10/08/98 | 328 | 312 | 10/08/98 | 770 | 767 | 10/08/98 | 396 | 392 |
| 10/09/98 | 316 | 313 | 10/09/98 | 779 | 776 | 10/09/98 | 390 | 378 |
| 10/10/98 | 312 | 303 | 10/10/98 | 782 | 776 | 10/10/98 | 392 | 376 |
| 10/11/98 | 309 | 303 | 10/11/98 | 779 | 776 | 10/11/98 | 390 | 385 |
| 10/12/98 | 327 | 308 | 10/12/98 | 782 | 776 | 10/12/98 | 391 | 384 |
| 10/13/98 | 356 | 333 | 10/13/98 | 782 | 776 | 10/13/98 | 399 | 384 |
| 10/14/98 | 356 | 346 | 10/14/98 | 785 | 779 | 10/14/98 | 407 | 400 |
| 10/15/98 | 343 | 332 | 10/15/98 | 782 | 767 | 10/15/98 | 403 | 396 |
| 10/16/98 | 348 | 332 | 10/16/98 | 813 | 810 | 10/16/98 | 401 | 396 |
| 10/17/98 | 359 | 347 | 10/17/98 | 817 | 813 | 10/17/98 | 396 | 390 |
| 10/18/98 | 361 | 353 | 10/18/98 | 815 | 813 | 10/18/98 | 401 | 390 |
| 10/19/98 | 361 | 353 | 10/19/98 | 815 | 813 | 10/19/98 | 396 | 390 |
| 10/20/98 | 362 | 354 | 10/20/98 | 813 | 810 | 10/20/98 | 407 | 384 |
| 10/21/98 | 361 | 355 | 10/21/98 | 829 | 823 | 10/21/98 | 407 | 387 |
| 10/22/98 | 362 | 348 | 10/22/98 | 838 | 829 | 10/22/98 | 407 | 384 |
| 10/23/98 | 363 | 348 | 10/23/98 | 838 | 829 | 10/23/98 | 396 | 388 |
| 10/24/98 | 380 | 361 | 10/24/98 | 845 | 829 | 10/24/98 | 407 | 388 |
| 10/25/98 | 368 | 364 | 10/25/98 | 842 | 835 | 10/25/98 | 407 | 390 |
| 10/26/98 | 366 | 362 | 10/26/98 | 845 | 829 | 10/26/98 | 401 | 385 |
| 10/27/98 | 358 | 353 | 10/27/98 | 845 | 829 | 10/27/98 | 401 | 388 |
| 10/28/98 | 367 | 352 | 10/28/98 | 842 | 829 | 10/28/98 | 401 | 388 |
| 10/29/98 | 374 | 358 | 10/29/98 | 842 | 835 | 10/29/98 | 403 | 386 |

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 10/30/98 | 362 | 353 | 10/30/98 | 845 | 832 | 10/30/98 | 398 | 384 |
| 10/31/98 | 352 | 339 | 10/31/98 | 848 | 838 | 10/31/98 | 400 | 384 |
| 11/01/98 | 361 | 347 | 11/01/98 | 854 | 845 | 11/01/98 | 401 | 390 |
| 11/02/98 | 352 | 344 | 11/02/98 | 857 | 848 | 11/02/98 | 404 | 390 |
| 11/03/98 | 348 | 339 | 11/03/98 | 859 | 846 | 11/03/98 | 401 | 388 |
| 11/04/98 | 353 | 343 | 11/04/98 | 857 | 845 | 11/04/98 | 396 | 393 |
| 11/05/98 | 387 | 352 | 11/05/98 | 845 | 842 | 11/05/98 | 407 | 396 |
| 11/06/98 | 363 | 348 | 11/06/98 | 857 | 848 | 11/06/98 | 407 | 393 |
| 11/07/98 | 362 | 348 | 11/07/98 | 859 | 854 | 11/07/98 | 401 | 390 |
| 11/08/98 | 352 | 359 | 11/08/98 | 873 | 864 | 11/08/98 | 403 | 396 |
| 11/09/98 | 349 | 339 | 11/09/98 | 873 | 864 | 11/09/98 | 398 | 383 |
| 11/10/98 | 353 | 338 | 11/10/98 | 876 | 860 | 11/10/98 | 396 | 381 |
| 11/11/98 | 349 | 338 | 11/11/98 | 876 | 873 | 11/11/98 | 396 | 384 |
| 11/12/98 | 288 | 274 | 11/12/98 | 876 | 870 | 11/12/98 | 396 | 384 |
| 11/13/98 | 264 | 259 | 11/13/98 | 873 | 860 | 11/13/98 | 399 | 384 |
| 11/14/98 | 263 | 253 | 11/14/98 | 876 | 870 | 11/14/98 | 407 | 396 |
| 11/15/98 | 253 | 249 | 11/15/98 | 876 | 873 | 11/15/98 | 407 | 395 |
| 11/16/98 | 248 | 237 | 11/16/98 | 876 | 870 | 11/16/98 | 407 | 395 |
| 11/17/98 | 249 | 214 | 11/17/98 | 873 | 870 | 11/17/98 | 407 | 390 |
| 11/18/98 | 219 | 210 | 11/18/98 | 876 | 867 | 11/18/98 | 401 | 384 |
| 11/19/98 | 210 | 194 | 11/19/98 | 873 | 864 | 11/19/98 | 390 | 378 |
| 11/20/98 | 218 | 200 | 11/20/98 | 873 | 864 | 11/20/98 | 396 | 378 |
| 11/21/98 | 228 | 209 | 11/21/98 | 876 | 860 | 11/21/98 | 401 | 384 |
| 11/22/98 | 219 | 209 | 11/22/98 | 876 | 873 | 11/22/98 | 403 | 392 |
| 11/23/98 | 220 | 209 | 11/23/98 | 876 | 870 | 11/23/98 | 401 | 396 |
| 11/24/98 | 209 | 194 | 11/24/98 | 873 | 860 | 11/24/98 | 401 | 390 |
| 11/25/98 | 219 | 203 | 11/25/98 | 876 | 870 | 11/25/98 | 401 | 399 |
| 11/26/98 | 224 | 211 | 11/26/98 | 876 | 873 | 11/26/98 | 401 | 396 |
| 11/27/98 | 221 | 205 | 11/27/98 | 876 | 870 | 11/27/98 | 399 | 390 |

| Well 4H4 | | | | Schobers Resort | | | | Devils Kitchen | | | |
|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|
| Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | |
| Date | High | Low | Date | High | Low | Date | High | Low | Date | High | Low |
| 11/28/98 | 199 | 190 | 11/28/98 | 873 | 870 | 11/28/98 | 399 | 390 | 11/28/98 | 399 | 390 |
| 11/29/98 | 204 | 233 | 11/29/98 | 864 | 860 | 11/29/98 | 401 | 390 | 11/29/98 | 401 | 390 |
| 11/30/98 | 214 | 196 | 11/30/98 | 876 | 860 | 11/30/98 | 401 | 389 | 11/30/98 | 401 | 389 |
| 12/01/98 | 209 | 194 | 12/01/98 | 876 | 870 | 12/01/98 | 390 | 385 | 12/01/98 | 390 | 385 |
| 12/02/98 | 209 | 189 | 12/02/98 | 892 | 876 | 12/02/98 | 381 | 374 | 12/02/98 | 381 | 374 |
| 12/03/98 | 238 | 209 | 12/03/98 | 864 | 860 | 12/03/98 | 378 | 373 | 12/03/98 | 378 | 373 |
| 12/04/98 | 209 | 205 | 12/04/98 | 873 | 870 | 12/04/98 | 390 | 377 | 12/04/98 | 390 | 377 |
| 12/05/98 | 210 | 194 | 12/05/98 | 864 | 860 | 12/05/98 | 390 | 384 | 12/05/98 | 390 | 384 |
| 12/06/98 | 219 | 179 | 12/06/98 | 876 | 860 | 12/06/98 | 395 | 384 | 12/06/98 | 395 | 384 |
| 12/07/98 | 219 | 184 | 12/07/98 | 860 | 857 | 12/07/98 | 396 | 386 | 12/07/98 | 396 | 386 |
| 12/08/98 | 215 | 187 | 12/08/98 | 876 | 860 | 12/08/98 | 384 | 381 | 12/08/98 | 384 | 381 |
| 12/09/98 | 212 | 199 | 12/09/98 | 873 | 860 | 12/09/98 | 385 | 380 | 12/09/98 | 385 | 380 |
| 12/10/98 | 199 | 194 | 12/10/98 | 876 | 860 | 12/10/98 | 401 | 384 | 12/10/98 | 401 | 384 |
| 12/11/98 | 213 | 194 | 12/11/98 | 879 | 864 | 12/11/98 | 401 | 397 | 12/11/98 | 401 | 397 |
| 12/12/98 | 214 | 200 | 12/12/98 | 879 | 876 | 12/12/98 | 400 | 397 | 12/12/98 | 400 | 397 |
| 12/13/98 | 224 | 205 | 12/13/98 | 889 | 879 | 12/13/98 | 393 | 390 | 12/13/98 | 393 | 390 |
| 12/14/98 | 219 | 199 | 12/14/98 | 879 | 873 | 12/14/98 | 378 | 373 | 12/14/98 | 378 | 373 |
| 12/15/98 | 208 | 199 | 12/15/98 | 873 | 864 | 12/15/98 | 385 | 378 | 12/15/98 | 385 | 378 |
| 12/16/98 | 209 | 199 | 12/16/98 | 867 | 860 | 12/16/98 | 385 | 381 | 12/16/98 | 385 | 381 |
| 12/17/98 | 229 | 209 | 12/17/98 | 876 | 860 | 12/17/98 | 390 | 382 | 12/17/98 | 390 | 382 |
| 12/18/98 | 234 | 224 | 12/18/98 | 879 | 873 | 12/18/98 | 386 | 390 | 12/18/98 | 386 | 390 |
| 12/19/98 | 238 | 228 | 12/19/98 | 889 | 876 | 12/19/98 | 384 | 378 | 12/19/98 | 384 | 378 |
| 12/20/98 | 219 | 209 | 12/20/98 | 879 | 873 | 12/20/98 | 384 | 378 | 12/20/98 | 384 | 378 |
| 12/21/98 | 219 | 209 | 12/21/98 | 860 | 857 | 12/21/98 | 386 | 381 | 12/21/98 | 386 | 381 |
| 12/22/98 | 219 | 209 | 12/22/98 | 860 | 857 | 12/22/98 | 385 | 378 | 12/22/98 | 385 | 378 |
| 12/23/98 | 219 | 199 | 12/23/98 | 876 | 864 | 12/23/98 | 384 | 382 | 12/23/98 | 384 | 382 |
| 12/24/98 | 214 | 199 | 12/24/98 | 892 | 870 | 12/24/98 | 383 | 378 | 12/24/98 | 383 | 378 |
| 12/25/98 | 208 | 199 | 12/25/98 | 889 | 876 | 12/25/98 | 383 | 380 | 12/25/98 | 383 | 380 |
| 12/26/98 | 222 | 199 | 12/26/98 | 860 | 848 | 12/26/98 | 390 | 384 | 12/26/98 | 390 | 384 |

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 12/27/98 | 208 | 199 | 12/27/98 | 876 | 860 | 12/27/98 | 384 | 383 |
| 12/28/98 | 209 | 199 | 12/28/98 | 879 | 873 | 12/28/98 | 385 | 384 |
| 12/29/98 | 219 | 208 | 12/29/98 | 889 | 876 | 12/29/98 | 386 | 384 |
| 12/30/98 | 223 | 218 | 12/30/98 | 879 | 873 | 12/30/98 | 404 | 401 |
| 12/31/98 | 240 | 229 | 12/31/98 | 860 | 857 | 12/31/98 | 404 | 401 |
| 01/01/99 | 204 | 197 | 01/01/99 | 860 | 857 | 01/01/99 | 407 | 390 |
| 01/02/99 | 219 | 204 | 01/02/99 | 876 | 864 | 01/02/99 | 407 | 401 |
| 01/03/99 | 210 | 203 | 01/03/99 | 892 | 870 | 01/03/99 | 396 | 395 |
| 01/04/99 | 219 | 204 | 01/04/99 | 889 | 876 | 01/04/99 | 396 | 395 |
| 01/05/99 | 228 | 214 | 01/05/99 | 860 | 848 | 01/05/99 | 391 | 390 |
| 01/06/99 | 234 | 219 | 01/06/99 | 857 | 848 | 01/06/99 | 390 | 389 |
| 01/07/99 | 240 | 229 | 01/07/99 | 860 | 845 | 01/07/99 | 390 | 389 |
| 01/08/99 | 220 | 208 | 01/08/99 | 876 | 860 | 01/08/99 | 399 | 396 |
| 01/09/99 | 220 | 203 | 01/09/99 | 879 | 873 | 01/09/99 | 399 | 396 |
| 01/10/99 | 230 | 219 | 01/10/99 | 889 | 876 | 01/10/99 | 396 | 390 |
| 01/11/99 | 245 | 229 | 01/11/99 | 879 | 873 | 01/11/99 | 389 | 385 |
| 01/12/99 | 229 | 227 | 01/12/99 | 860 | 857 | 01/12/99 | 392 | 389 |
| 01/13/99 | 229 | 227 | 01/13/99 | 860 | 857 | 01/13/99 | 397 | 392 |
| 01/14/99 | 229 | 220 | 01/14/99 | 889 | 876 | 01/14/99 | 390 | 384 |
| 01/15/99 | 243 | 231 | 01/15/99 | 890 | 879 | 01/15/99 | 389 | 385 |
| 01/16/99 | 249 | 234 | 01/16/99 | 885 | 879 | 01/16/99 | 384 | 383 |
| 01/17/99 | 238 | 229 | 01/17/99 | 889 | 879 | 01/17/99 | 396 | 386 |
| 01/18/99 | 234 | 230 | 01/18/99 | 890 | 879 | 01/18/99 | 395 | 390 |
| 01/19/99 | 229 | 227 | 01/19/99 | 890 | 882 | 01/19/99 | 393 | 391 |
| 01/20/99 | 219 | 203 | 01/20/99 | 892 | 889 | 01/20/99 | 389 | 385 |
| 01/21/99 | 224 | 200 | 01/21/99 | 892 | 889 | 01/21/99 | 390 | 389 |
| 01/22/99 | 225 | 209 | 01/22/99 | 892 | 885 | 01/22/99 | 390 | 384 |
| 01/23/99 | 239 | 229 | 01/23/99 | 892 | 889 | 01/23/99 | 401 | 396 |
| 01/24/99 | 229 | 214 | 01/24/99 | 892 | 889 | 01/24/99 | 401 | 399 |

| Well 4H4 | | | | Schobers Resort | | | | Devils Kitchen | | | |
|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|
| Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | |
| Date | High | Low | Date | High | Low | Date | High | Low | Date | High | Low |
| 01/25/99 | 224 | 216 | 01/25/99 | 892 | 889 | 01/25/99 | 892 | 889 | 01/25/99 | 396 | 390 |
| 01/26/99 | 221 | 214 | 01/26/99 | 889 | 885 | 01/26/99 | 889 | 885 | 01/26/99 | 395 | 393 |
| 01/27/99 | 218 | 209 | 01/27/99 | 892 | 876 | 01/27/99 | 892 | 876 | 01/27/99 | 384 | 378 |
| 01/28/99 | 229 | 214 | 01/28/99 | 892 | 864 | 01/28/99 | 892 | 864 | 01/28/99 | 383 | 380 |
| 01/29/99 | 230 | 220 | 01/29/99 | 876 | 864 | 01/29/99 | 876 | 864 | 01/29/99 | 383 | 380 |
| 01/30/99 | 244 | 229 | 01/30/99 | 868 | 860 | 01/30/99 | 868 | 860 | 01/30/99 | 390 | 384 |
| 01/31/99 | 248 | 239 | 01/31/99 | 868 | 860 | 01/31/99 | 868 | 860 | 01/31/99 | 396 | 391 |
| 02/01/99 | 222 | 210 | 02/01/99 | 864 | 864 | 02/01/99 | 864 | 864 | 02/01/99 | 384 | 380 |
| 02/02/99 | 242 | 218 | 02/02/99 | 864 | 864 | 02/02/99 | 864 | 864 | 02/02/99 | 390 | 381 |
| 02/03/99 | 259 | 242 | 02/03/99 | 892 | 892 | 02/03/99 | 892 | 892 | 02/03/99 | 401 | 392 |
| 02/04/99 | 249 | 239 | 02/04/99 | 889 | 889 | 02/04/99 | 889 | 889 | 02/04/99 | 408 | 407 |
| 02/05/99 | 239 | 211 | 02/05/99 | 901 | 901 | 02/05/99 | 901 | 901 | 02/05/99 | 404 | 396 |
| 02/06/99 | 234 | 218 | 02/06/99 | 892 | 892 | 02/06/99 | 892 | 892 | 02/06/99 | 398 | 395 |
| 02/07/99 | 249 | 230 | 02/07/99 | 895 | 895 | 02/07/99 | 895 | 895 | 02/07/99 | 403 | 397 |
| 02/08/99 | 248 | 229 | 02/08/99 | 895 | 895 | 02/08/99 | 895 | 895 | 02/08/99 | 403 | 400 |
| 02/09/99 | 250 | 233 | 02/09/99 | 895 | 895 | 02/09/99 | 895 | 895 | 02/09/99 | 407 | 400 |
| 02/10/99 | 254 | 247 | 02/10/99 | 892 | 892 | 02/10/99 | 892 | 892 | 02/10/99 | 401 | 386 |
| 02/11/99 | 240 | 199 | 02/11/99 | 889 | 889 | 02/11/99 | 889 | 889 | 02/11/99 | 396 | 389 |
| 02/12/99 | 264 | 254 | 02/12/99 | 876 | 876 | 02/12/99 | 876 | 876 | 02/12/99 | 397 | 390 |
| 02/13/99 | 284 | 269 | 02/13/99 | 876 | 876 | 02/13/99 | 876 | 876 | 02/13/99 | 395 | 391 |
| 02/14/99 | 304 | 288 | 02/14/99 | 885 | 885 | 02/14/99 | 885 | 885 | 02/14/99 | 396 | 390 |
| 02/15/99 | 288 | 279 | 02/15/99 | 895 | 895 | 02/15/99 | 895 | 895 | 02/15/99 | 390 | 389 |
| 02/16/99 | 296 | 285 | 02/16/99 | 885 | 885 | 02/16/99 | 885 | 885 | 02/16/99 | 397 | 390 |
| 02/17/99 | 303 | 254 | 02/17/99 | 885 | 885 | 02/17/99 | 885 | 885 | 02/17/99 | 404 | 389 |
| 02/18/99 | 313 | 290 | 02/18/99 | 889 | 889 | 02/18/99 | 889 | 889 | 02/18/99 | 412 | 400 |
| 02/19/99 | 286 | 279 | 02/19/99 | 892 | 892 | 02/19/99 | 892 | 892 | 02/19/99 | 407 | 393 |
| 02/20/99 | 284 | 269 | 02/20/99 | 885 | 885 | 02/20/99 | 885 | 885 | 02/20/99 | 395 | 390 |
| 02/21/99 | 293 | 274 | 02/21/99 | 889 | 889 | 02/21/99 | 889 | 889 | 02/21/99 | 398 | 395 |
| 02/22/99 | 274 | 259 | 02/22/99 | 892 | 892 | 02/22/99 | 892 | 892 | 02/22/99 | 390 | 383 |

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 02/23/99 | 284 | 274 | 02/23/99 | 889 | 889 | 02/23/99 | 391 | 385 |
| 02/24/99 | 293 | 281 | 02/24/99 | 892 | 892 | 02/24/99 | 407 | 401 |
| 02/25/99 | 292 | 284 | 02/25/99 | 901 | 901 | 02/25/99 | 404 | 401 |
| 02/26/99 | 276 | 266 | 02/26/99 | 898 | 898 | 02/26/99 | 400 | 392 |
| 02/27/99 | 274 | 266 | 02/27/99 | 898 | 898 | 02/27/99 | 395 | 390 |
| 02/28/99 | 284 | 264 | 02/28/99 | 901 | 901 | 02/28/99 | 404 | 390 |
| 03/01/99 | 293 | 276 | 03/01/99 | 904 | 895 | 03/01/99 | 405 | 396 |
| 03/02/99 | 313 | 286 | 03/02/99 | 898 | 892 | 03/02/99 | 404 | 391 |
| 03/03/99 | 323 | 318 | 03/03/99 | 907 | 892 | 03/03/99 | 412 | 390 |
| 03/04/99 | 311 | 279 | 03/04/99 | 892 | 882 | 03/04/99 | 405 | 399 |
| 03/05/99 | 279 | 269 | 03/05/99 | 904 | 895 | 03/05/99 | 396 | 390 |
| 03/06/99 | 284 | 269 | 03/06/99 | 904 | 898 | 03/06/99 | 408 | 395 |
| 03/07/99 | 273 | 259 | 03/07/99 | 907 | 898 | 03/07/99 | 407 | 403 |
| 03/08/99 | 269 | 249 | 03/08/99 | 904 | 892 | 03/08/99 | 401 | 389 |
| 03/09/99 | 269 | 259 | 03/09/99 | 898 | 892 | 03/09/99 | 401 | 396 |
| 03/10/99 | 269 | 243 | 03/10/99 | 904 | 892 | 03/10/99 | 399 | 396 |
| 03/11/99 | 269 | 247 | 03/11/99 | 901 | 898 | 03/11/99 | 401 | 393 |
| 03/12/99 | 249 | 234 | 03/12/99 | 892 | 889 | 03/12/99 | 401 | 389 |
| 03/13/99 | 269 | 239 | 03/13/99 | 898 | 892 | 03/13/99 | 395 | 382 |
| 03/14/99 | 269 | 249 | 03/14/99 | 901 | 895 | 03/14/99 | 401 | 390 |
| 03/15/99 | 264 | 249 | 03/15/99 | 904 | 895 | 03/15/99 | 405 | 396 |
| 03/16/99 | 245 | 239 | 03/16/99 | 895 | 892 | 03/16/99 | 406 | 398 |
| 03/17/99 | 248 | 228 | 03/17/99 | 898 | 895 | 03/17/99 | 400 | 390 |
| 03/18/99 | 247 | 227 | 03/18/99 | 904 | 892 | 03/18/99 | 396 | 389 |
| 03/19/99 | 249 | 229 | 03/19/99 | 895 | 892 | 03/19/99 | 397 | 390 |
| 03/20/99 | 244 | 244 | 03/20/99 | 895 | 892 | 03/20/99 | 401 | 390 |
| 03/21/99 | 249 | 229 | 03/21/99 | 895 | 892 | 03/21/99 | 404 | 389 |
| 03/22/99 | 258 | 229 | 03/22/99 | 898 | 892 | 03/22/99 | 401 | 395 |
| 03/23/99 | 249 | 229 | 03/23/99 | 904 | 892 | 03/23/99 | 401 | 399 |

| Well 4H4 | | | | Schobers Resort | | | | Devils Kitchen | | | |
|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|
| Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | |
| Date | High | Low | Date | High | Low | Date | High | Low | Date | High | Low |
| 03/24/99 | 247 | 230 | 03/24/99 | 904 | 895 | 03/24/99 | 904 | 895 | 03/24/99 | 406 | 397 |
| 03/25/99 | 243 | 228 | 03/25/99 | 901 | 892 | 03/25/99 | 901 | 892 | 03/25/99 | 400 | 391 |
| 03/26/99 | 255 | 238 | 03/26/99 | 907 | 895 | 03/26/99 | 907 | 895 | 03/26/99 | 396 | 395 |
| 03/27/99 | 240 | 219 | 03/27/99 | 904 | 895 | 03/27/99 | 904 | 895 | 03/27/99 | 396 | 393 |
| 03/28/99 | 229 | 209 | 03/28/99 | 898 | 892 | 03/28/99 | 898 | 892 | 03/28/99 | 397 | 396 |
| 03/29/99 | 269 | 219 | 03/29/99 | 904 | 892 | 03/29/99 | 904 | 892 | 03/29/99 | 408 | 398 |
| 03/30/99 | 269 | 238 | 03/30/99 | 907 | 895 | 03/30/99 | 907 | 895 | 03/30/99 | 408 | 405 |
| 03/31/99 | 249 | 247 | 03/31/99 | 904 | 895 | 03/31/99 | 904 | 895 | 03/31/99 | 408 | 405 |
| 04/01/99 | 248 | 240 | 04/01/99 | 904 | 892 | 04/01/99 | 904 | 892 | 04/01/99 | 406 | 401 |
| 04/02/99 | 239 | 231 | 04/02/99 | 901 | 892 | 04/02/99 | 901 | 892 | 04/02/99 | 398 | 396 |
| 04/03/99 | 230 | 225 | 04/03/99 | 907 | 895 | 04/03/99 | 907 | 895 | 04/03/99 | 413 | 396 |
| 04/04/99 | 269 | 219 | 04/04/99 | 895 | 889 | 04/04/99 | 895 | 889 | 04/04/99 | 395 | 389 |
| 04/05/99 | 244 | 214 | 04/05/99 | 895 | 892 | 04/05/99 | 895 | 892 | 04/05/99 | 401 | 390 |
| 04/06/99 | 243 | 209 | 04/06/99 | 895 | 892 | 04/06/99 | 895 | 892 | 04/06/99 | 398 | 391 |
| 04/07/99 | 230 | 227 | 04/07/99 | 895 | 892 | 04/07/99 | 895 | 892 | 04/07/99 | 400 | 392 |
| 04/08/99 | 274 | 239 | 04/08/99 | 907 | 882 | 04/08/99 | 907 | 882 | 04/08/99 | 395 | 389 |
| 04/09/99 | 264 | 253 | 04/09/99 | 892 | 882 | 04/09/99 | 892 | 882 | 04/09/99 | 396 | 390 |
| 04/10/99 | 284 | 255 | 04/10/99 | 892 | 882 | 04/10/99 | 892 | 882 | 04/10/99 | 403 | 389 |
| 04/11/99 | 284 | 274 | 04/11/99 | 895 | 889 | 04/11/99 | 895 | 889 | 04/11/99 | 404 | 389 |
| 04/12/99 | 288 | 279 | 04/12/99 | 895 | 889 | 04/12/99 | 895 | 889 | 04/12/99 | 395 | 390 |
| 04/13/99 | 296 | 281 | 04/13/99 | 892 | 889 | 04/13/99 | 892 | 889 | 04/13/99 | 391 | 390 |
| 04/14/99 | 308 | 284 | 04/14/99 | 889 | 882 | 04/14/99 | 889 | 882 | 04/14/99 | 407 | 389 |
| 04/15/99 | 294 | 279 | 04/15/99 | 876 | 873 | 04/15/99 | 876 | 873 | 04/15/99 | 401 | 393 |
| 04/16/99 | 298 | 279 | 04/16/99 | 879 | 876 | 04/16/99 | 879 | 876 | 04/16/99 | 401 | 390 |
| 04/17/99 | 298 | 284 | 04/17/99 | 879 | 873 | 04/17/99 | 879 | 873 | 04/17/99 | 400 | 396 |
| 04/18/99 | 303 | 284 | 04/18/99 | 882 | 876 | 04/18/99 | 882 | 876 | 04/18/99 | 404 | 389 |
| 04/19/99 | 308 | 288 | 04/19/99 | 892 | 879 | 04/19/99 | 892 | 879 | 04/19/99 | 409 | 389 |
| 04/20/99 | 318 | 298 | 04/20/99 | 879 | 876 | 04/20/99 | 879 | 876 | 04/20/99 | 424 | 401 |
| 04/21/99 | 326 | 313 | 04/21/99 | 892 | 885 | 04/21/99 | 892 | 885 | 04/21/99 | 430 | 407 |

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 04/22/99 | 308 | 296 | 04/22/99 | 907 | 901 | 04/22/99 | 440 | 390 |
| 04/23/99 | 298 | 288 | 04/23/99 | 907 | 892 | 04/23/99 | 401 | 390 |
| 04/24/99 | 298 | 288 | 04/24/99 | 892 | 889 | 04/24/99 | 413 | 390 |
| 04/25/99 | 308 | 288 | 04/25/99 | 892 | 889 | 04/25/99 | 421 | 396 |
| 04/26/99 | 317 | 291 | 04/26/99 | 892 | 889 | 04/26/99 | 419 | 401 |
| 04/27/99 | 314 | 303 | 04/27/99 | 892 | 885 | 04/27/99 | 413 | 396 |
| 04/28/99 | 303 | 288 | 04/28/99 | 892 | 889 | 04/28/99 | 430 | 407 |
| 04/29/99 | 307 | 296 | 04/29/99 | 895 | 889 | 04/29/99 | 408 | 396 |
| 04/30/99 | 304 | 293 | 04/30/99 | 889 | 882 | 04/30/99 | 401 | 390 |
| 05/01/99 | 323 | 298 | 05/01/99 | 885 | 876 | 05/01/99 | 403 | 390 |
| 05/02/99 | 333 | 292 | 05/02/99 | 885 | 876 | 05/02/99 | 409 | 390 |
| 05/03/99 | 333 | 288 | 05/03/99 | 885 | 876 | 05/03/99 | 419 | 390 |
| 05/04/99 | 320 | 303 | 05/04/99 | 892 | 879 | 05/04/99 | 419 | 390 |
| 05/05/99 | 316 | 305 | 05/05/99 | 889 | 876 | 05/05/99 | 401 | 389 |
| 05/06/99 | 330 | 305 | 05/06/99 | 892 | 889 | 05/06/99 | 413 | 401 |
| 05/07/99 | 343 | 293 | 05/07/99 | 892 | 889 | 05/07/99 | 419 | 396 |
| 05/08/99 | 339 | 320 | 05/08/99 | 892 | 889 | 05/08/99 | 420 | 396 |
| 05/09/99 | 332 | 315 | 05/09/99 | 892 | 889 | 05/09/99 | 406 | 390 |
| 05/10/99 | 328 | 308 | 05/10/99 | 892 | 889 | 05/10/99 | 406 | 388 |
| 05/11/99 | 328 | 312 | 05/11/99 | 892 | 889 | 05/11/99 | 407 | 391 |
| 05/12/99 | 348 | 318 | 05/12/99 | 892 | 889 | 05/12/99 | 425 | 391 |
| 05/13/99 | 343 | 328 | 05/13/99 | 892 | 889 | 05/13/99 | 422 | 413 |
| 05/14/99 | 343 | 309 | 05/14/99 | 904 | 895 | 05/14/99 | 413 | 388 |
| 05/15/99 | 330 | 313 | 05/15/99 | 898 | 892 | 05/15/99 | 407 | 388 |
| 05/16/99 | 328 | 310 | 05/16/99 | 892 | 889 | 05/16/99 | 407 | 384 |
| 05/17/99 | 333 | 312 | 05/17/99 | 889 | 882 | 05/17/99 | 413 | 384 |
| 05/18/99 | 343 | 324 | 05/18/99 | 892 | 882 | 05/18/99 | 419 | 390 |
| 05/19/99 | 338 | 328 | 05/19/99 | 892 | 889 | 05/19/99 | 396 | 391 |
| 05/20/99 | 339 | 323 | 05/20/99 | 892 | 889 | 05/20/99 | 403 | 390 |

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 05/21/99 | 338 | 323 | 05/21/99 | 895 | 892 | 05/21/99 | 401 | 392 |
| 05/22/99 | 333 | 319 | 05/22/99 | 892 | 889 | 05/22/99 | 407 | 390 |
| 05/23/99 | 328 | 312 | 05/23/99 | 892 | 885 | 05/23/99 | 395 | 384 |
| 05/24/99 | 331 | 318 | 05/24/99 | 889 | 882 | 05/24/99 | 401 | 378 |
| 05/25/99 | 338 | 320 | 05/25/99 | 889 | 879 | 05/25/99 | 403 | 389 |
| 05/26/99 | 338 | 323 | 05/26/99 | 892 | 885 | 05/26/99 | 400 | 390 |
| 05/27/99 | 323 | 313 | 05/27/99 | 892 | 885 | 05/27/99 | 407 | 384 |
| 05/28/99 | 338 | 328 | 05/28/99 | 895 | 882 | 05/28/99 | 407 | 390 |
| 05/29/99 | 348 | 328 | 05/29/99 | 895 | 889 | 05/29/99 | 407 | 384 |
| 05/30/99 | 346 | 333 | 05/30/99 | 892 | 889 | 05/30/99 | 400 | 381 |
| 05/31/99 | 338 | 319 | 05/31/99 | 889 | 879 | 05/31/99 | 400 | 381 |
| 06/01/99 | 338 | 318 | 06/01/99 | 889 | 879 | 06/01/99 | 407 | 384 |
| 06/02/99 | 348 | 328 | 06/02/99 | 892 | 885 | 06/02/99 | 407 | 396 |
| 06/03/99 | 338 | 318 | 06/03/99 | 892 | 889 | 06/03/99 | 401 | 390 |
| 06/04/99 | 343 | 338 | 06/04/99 | 901 | 892 | 06/04/99 | 396 | 384 |
| 06/05/99 | 338 | 325 | 06/05/99 | 892 | 889 | 06/05/99 | 396 | 381 |
| 06/06/99 | 338 | 323 | 06/06/99 | 892 | 882 | 06/06/99 | 406 | 381 |
| 06/07/99 | 348 | 328 | 06/07/99 | 892 | 882 | 06/07/99 | 406 | 387 |
| 06/08/99 | 348 | 333 | 06/08/99 | 892 | 885 | 06/08/99 | 406 | 388 |
| 06/09/99 | 340 | 328 | 06/09/99 | 892 | 885 | 06/09/99 | 396 | 392 |
| 06/10/99 | 338 | 323 | 06/10/99 | 892 | 889 | 06/10/99 | 396 | 390 |
| 06/11/99 | 317 | 308 | 06/11/99 | 892 | 889 | 06/11/99 | 391 | 384 |
| 06/12/99 | 303 | 290 | 06/12/99 | 892 | 889 | 06/12/99 | 389 | 380 |
| 06/13/99 | 288 | 279 | 06/13/99 | 892 | 882 | 06/13/99 | 395 | 378 |
| 06/14/99 | 284 | 269 | 06/14/99 | 889 | 882 | 06/14/99 | 396 | 384 |
| 06/15/99 | 278 | 264 | 06/15/99 | 889 | 882 | 06/15/99 | 396 | 384 |
| 06/16/99 | 273 | 256 | 06/16/99 | 892 | 882 | 06/16/99 | 396 | 383 |
| 06/17/99 | 274 | 244 | 06/17/99 | 892 | 889 | 06/17/99 | 396 | 390 |
| 06/18/99 | 249 | 239 | 06/18/99 | 892 | 889 | 06/18/99 | 397 | 380 |

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 06/19/99 | 336 | 223 | 06/19/99 | 892 | 889 | 06/19/99 | 400 | 383 |
| 06/20/99 | 243 | 209 | 06/20/99 | 892 | 889 | 06/20/99 | 396 | 389 |
| 06/21/99 | 239 | 219 | 06/21/99 | 892 | 889 | 06/21/99 | 399 | 390 |
| 06/22/99 | 237 | 219 | 06/22/99 | 892 | 887 | 06/22/99 | 393 | 383 |
| 06/23/99 | 209 | 199 | 06/23/99 | 892 | 889 | 06/23/99 | 390 | 388 |
| 06/24/99 | 209 | 204 | 06/24/99 | 892 | 889 | 06/24/99 | 401 | 384 |
| 06/25/99 | 214 | 199 | 06/25/99 | 895 | 892 | 06/25/99 | 397 | 388 |
| 06/26/99 | 214 | 199 | 06/26/99 | 892 | 889 | 06/26/99 | 396 | 381 |
| 06/27/99 | 209 | 189 | 06/27/99 | 892 | 885 | 06/27/99 | 389 | 378 |
| 06/28/99 | 199 | 179 | 06/28/99 | 889 | 882 | 06/28/99 | 391 | 373 |
| 06/29/99 | 203 | 187 | 06/29/99 | 889 | 879 | 06/29/99 | 390 | 373 |
| 06/30/99 | 209 | 179 | 06/30/99 | 892 | 889 | 06/30/99 | 396 | 384 |
| 07/01/99 | 210 | 181 | 07/01/99 | 892 | 876 | 07/01/99 | 400 | 378 |
| 07/02/99 | 219 | 187 | 07/02/99 | 892 | 889 | 07/02/99 | 405 | 388 |
| 07/03/99 | 219 | 190 | 07/03/99 | 892 | 889 | 07/03/99 | 396 | 382 |
| 07/04/99 | 204 | 179 | 07/04/99 | 904 | 895 | 07/04/99 | 389 | 378 |
| 07/05/99 | 189 | 169 | 07/05/99 | 898 | 892 | 07/05/99 | 384 | 373 |
| 07/06/99 | 189 | 159 | 07/06/99 | 892 | 889 | 07/06/99 | 384 | 373 |
| 07/07/99 | 198 | 179 | 07/07/99 | 889 | 882 | 07/07/99 | 390 | 375 |
| 07/08/99 | 199 | 169 | 07/08/99 | 892 | 882 | 07/08/99 | 384 | 372 |
| 07/09/99 | 184 | 161 | 07/09/99 | 892 | 889 | 07/09/99 | 385 | 373 |
| 07/10/99 | 188 | 159 | 07/10/99 | 892 | 889 | 07/10/99 | 378 | 372 |
| 07/11/99 | 189 | 159 | 07/11/99 | 895 | 892 | 07/11/99 | 384 | 373 |
| 07/12/99 | 189 | 169 | 07/12/99 | 892 | 889 | 07/12/99 | 378 | 373 |
| 07/13/99 | 199 | 174 | 07/13/99 | 892 | 885 | 07/13/99 | 384 | 383 |
| 07/14/99 | 209 | 174 | 07/14/99 | 889 | 882 | 07/14/99 | 396 | 376 |
| 07/15/99 | 199 | 174 | 07/15/99 | 889 | 879 | 07/15/99 | 396 | 384 |
| 07/16/99 | 194 | 172 | 07/16/99 | 892 | 885 | 07/16/99 | 396 | 384 |
| 07/17/99 | 189 | 170 | 07/17/99 | 892 | 885 | 07/17/99 | 384 | 373 |

| Well 4H4 | | | Schobers Resort | | | Devils Kitchen | | |
|-------------------------------|------|-----|-------------------------------|------|-----|-------------------------------|------|-----|
| Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | | Flow in pounds per hour (pph) | | |
| Date | High | Low | Date | High | Low | Date | High | Low |
| 07/18/99 | 189 | 159 | 07/18/99 | 895 | 882 | 07/18/99 | 378 | 361 |
| 07/19/99 | 189 | 159 | 07/19/99 | 895 | 889 | 07/19/99 | 376 | 356 |
| 07/20/99 | 199 | 169 | 07/20/99 | 892 | 889 | 07/20/99 | 384 | 373 |
| 07/21/99 | 189 | 163 | 07/21/99 | 889 | 879 | 07/21/99 | 384 | 373 |
| 07/22/99 | 184 | 154 | 07/22/99 | 889 | 879 | 07/22/99 | 384 | 370 |
| 07/23/99 | 196 | 163 | 07/23/99 | 892 | 885 | 07/23/99 | 390 | 372 |
| 07/24/99 | 199 | 172 | 07/24/99 | 892 | 889 | 07/24/99 | 396 | 378 |
| 07/25/99 | 189 | 166 | 07/25/99 | 901 | 892 | 07/25/99 | 390 | 367 |
| 07/26/99 | 190 | 164 | 07/26/99 | 892 | 889 | 07/26/99 | 384 | 370 |
| 07/27/99 | 190 | 165 | 07/27/99 | 892 | 882 | 07/27/99 | 385 | 375 |
| 07/28/99 | 190 | 169 | 07/28/99 | | | 07/28/99 | 387 | 373 |
| 07/29/99 | 189 | 163 | 07/29/99 | | | 07/29/99 | 390 | 367 |
| 07/30/99 | 199 | 169 | 07/30/99 | | | 07/30/99 | 397 | 373 |
| 07/31/99 | 198 | 169 | 07/31/99 | | | 07/31/99 | 391 | 377 |
| 08/01/99 | 184 | 160 | 08/01/99 | | | 08/01/99 | 381 | 370 |
| 08/02/99 | 179 | 154 | 08/02/99 | | | 08/02/99 | 378 | 367 |
| 08/03/99 | 193 | 163 | 08/03/99 | | | 08/03/99 | 390 | 370 |
| 08/04/99 | 199 | 159 | 08/04/99 | | | 08/04/99 | 385 | 367 |
| 08/05/99 | 200 | 177 | 08/05/99 | | | 08/05/99 | 393 | 376 |
| 08/06/99 | 189 | 169 | 08/06/99 | | | 08/06/99 | 384 | 376 |
| 08/07/99 | 179 | 159 | 08/07/99 | | | 08/07/99 | 378 | 368 |
| 08/08/99 | 184 | 159 | 08/08/99 | | | 08/08/99 | 381 | 367 |
| 08/09/99 | 194 | 169 | 08/09/99 | | | 08/09/99 | 393 | 373 |
| 08/10/99 | 196 | 174 | 08/10/99 | | | 08/10/99 | 384 | 373 |
| 08/11/99 | 179 | 164 | 08/11/99 | | | 08/11/99 | 400 | 378 |
| 08/12/99 | 184 | 154 | 08/12/99 | | | 08/12/99 | 401 | 376 |
| 08/13/99 | 199 | 169 | 08/13/99 | | | 08/13/99 | 401 | 378 |
| 08/14/99 | 198 | 159 | 08/14/99 | | | 08/14/99 | 390 | 361 |
| 08/15/99 | 174 | 149 | 08/15/99 | | | 08/15/99 | 376 | 358 |

| Well 4H4 | | | | Schobers Resort | | | | Devils Kitchen | | | |
|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|
| Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | |
| Date | High | Low | Date | High | Low | Date | High | Low | Date | High | Low |
| 08/16/99 | 196 | 159 | 08/16/99 | | | 08/16/99 | | | 08/16/99 | 367 | 353 |
| 08/17/99 | 189 | 174 | 08/17/99 | | | 08/17/99 | | | 08/17/99 | 381 | 361 |
| 08/18/99 | 204 | 169 | 08/18/99 | 876 | 868 | 08/18/99 | | | 08/18/99 | 384 | 370 |
| 08/19/99 | 198 | 169 | 08/19/99 | 876 | 873 | 08/19/99 | | | 08/19/99 | 378 | 373 |
| 08/20/99 | 199 | 164 | 08/20/99 | 876 | 873 | 08/20/99 | | | 08/20/99 | 381 | 370 |
| 08/21/99 | 199 | 168 | 08/21/99 | 876 | 864 | 08/21/99 | | | 08/21/99 | 387 | 373 |
| 08/22/99 | 198 | 169 | 08/22/99 | 864 | 860 | 08/22/99 | | | 08/22/99 | 385 | 373 |
| 08/23/99 | 199 | 169 | 08/23/99 | 870 | 867 | 08/23/99 | | | 08/23/99 | 391 | 368 |
| 08/24/99 | 199 | 169 | 08/24/99 | 868 | 865 | 08/24/99 | | | 08/24/99 | 383 | 373 |
| 08/25/99 | 199 | 179 | 08/25/99 | 889 | 860 | 08/25/99 | | | 08/25/99 | 383 | 373 |
| 08/26/99 | 198 | 173 | 08/26/99 | 876 | 870 | 08/26/99 | | | 08/26/99 | 381 | 373 |
| 08/27/99 | 199 | 169 | 08/27/99 | 876 | 870 | 08/27/99 | | | 08/27/99 | 383 | 372 |
| 08/28/99 | 199 | 164 | 08/28/99 | 873 | 860 | 08/28/99 | | | 08/28/99 | 378 | 370 |
| 08/29/99 | 199 | 169 | 08/29/99 | 873 | 860 | 08/29/99 | | | 08/29/99 | 378 | 372 |
| 08/30/99 | 200 | 177 | 08/30/99 | 876 | 860 | 08/30/99 | | | 08/30/99 | 384 | 373 |
| 08/31/99 | 199 | 168 | 08/31/99 | 876 | 860 | 08/31/99 | | | 08/31/99 | 382 | 367 |
| 09/01/99 | 209 | 171 | 09/01/99 | 876 | 867 | 09/01/99 | | | 09/01/99 | 430 | 419 |
| 09/02/99 | 199 | 179 | 09/02/99 | 876 | 864 | 09/02/99 | | | 09/02/99 | 421 | 419 |
| 09/03/99 | 193 | 170 | 09/03/99 | 873 | 860 | 09/03/99 | | | 09/03/99 | 419 | 416 |
| 09/04/99 | 194 | 170 | 09/04/99 | 870 | 860 | 09/04/99 | | | 09/04/99 | 417 | 413 |
| 09/05/99 | 199 | 169 | 09/05/99 | 873 | 860 | 09/05/99 | | | 09/05/99 | 419 | 413 |
| 09/06/99 | 204 | 179 | 09/06/99 | 873 | 857 | 09/06/99 | | | 09/06/99 | 424 | 419 |
| 09/07/99 | 199 | 174 | 09/07/99 | 867 | 860 | 09/07/99 | | | 09/07/99 | 420 | 417 |
| 09/08/99 | 199 | 179 | 09/08/99 | 860 | 845 | 09/08/99 | | | 09/08/99 | 430 | 421 |
| 09/09/99 | 204 | 189 | 09/09/99 | 868 | 845 | 09/09/99 | | | 09/09/99 | 433 | 430 |
| 09/10/99 | 209 | 174 | 09/10/99 | 892 | 876 | 09/10/99 | | | 09/10/99 | 430 | 425 |
| 09/11/99 | 199 | 169 | 09/11/99 | 895 | 892 | 09/11/99 | | | 09/11/99 | 421 | 416 |
| 09/12/99 | 199 | 169 | 09/12/99 | 884 | 873 | 09/12/99 | | | 09/12/99 | 410 | 407 |
| 09/13/99 | 204 | 179 | 09/13/99 | 860 | 845 | 09/13/99 | | | 09/13/99 | 417 | 407 |

| Well 4H4 | | | | Schobers Resort | | | | Devils Kitchen | | | |
|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|-------------------------------|------|-------------------------------|----------|-------------------------------|-----|
| Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | | Flow in pounds per hour (pph) | |
| Date | High | Low | Date | High | Low | Date | High | Low | Date | High | Low |
| 09/14/99 | 209 | 184 | 09/14/99 | 860 | 845 | 09/14/99 | 860 | 845 | 09/14/99 | 427 | 419 |
| 09/15/99 | 204 | 189 | 09/15/99 | 876 | 845 | 09/15/99 | 876 | 845 | 09/15/99 | 427 | 419 |
| 09/16/99 | 204 | 179 | 09/16/99 | 860 | 857 | 09/16/99 | 860 | 857 | 09/16/99 | 424 | 419 |
| 09/17/99 | 204 | 179 | 09/17/99 | 860 | 848 | 09/17/99 | 860 | 848 | 09/17/99 | 424 | 417 |
| 09/18/99 | 209 | 179 | 09/18/99 | 860 | 845 | 09/18/99 | 860 | 845 | 09/18/99 | 427 | 414 |
| 09/19/99 | 199 | 184 | 09/19/99 | 873 | 860 | 09/19/99 | 873 | 860 | 09/19/99 | 424 | 419 |
| 09/20/99 | 189 | 169 | 09/20/99 | 870 | 860 | 09/20/99 | 870 | 860 | 09/20/99 | 419 | 414 |
| 09/21/99 | 204 | 169 | 09/21/99 | 873 | 860 | 09/21/99 | 873 | 860 | 09/21/99 | 424 | 413 |
| 09/22/99 | 199 | 174 | 09/22/99 | 873 | 860 | 09/22/99 | 873 | 860 | 09/22/99 | 427 | 419 |
| 09/23/99 | 205 | 185 | 09/23/99 | 867 | 860 | 09/23/99 | 867 | 860 | 09/23/99 | 430 | 419 |
| 09/24/99 | 194 | 179 | 09/24/99 | 860 | 845 | 09/24/99 | 860 | 845 | 09/24/99 | 430 | 429 |
| 09/25/99 | 209 | 170 | 09/25/99 | 868 | 845 | 09/25/99 | 868 | 845 | 09/25/99 | 429 | 424 |
| 09/26/99 | 207 | 194 | 09/26/99 | 892 | 876 | 09/26/99 | 892 | 876 | 09/26/99 | 419 | 413 |
| 09/27/99 | 203 | 188 | 09/27/99 | 895 | 892 | 09/27/99 | 895 | 892 | 09/27/99 | 423 | 414 |
| 09/28/99 | 184 | 164 | 09/28/99 | 884 | 873 | 09/28/99 | 884 | 873 | 09/28/99 | 430 | 419 |
| 09/29/99 | 184 | 174 | 09/29/99 | 868 | 845 | 09/29/99 | 868 | 845 | 09/29/99 | 427 | 417 |
| 09/30/99 | 191 | 171 | 09/30/99 | 892 | 876 | 09/30/99 | 892 | 876 | 09/30/99 | 425 | 413 |